PUBLIC WORKS APPROPRIATIONS FOR 1956

HEARINGS

BEFORE THE

SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS HOUSE OF REPRESENTATIVES

EIGHTY-FOURTH CONGRESS

FIRST SESSION

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CARSON CULP, *Staff Assistant to the Subcommittee*

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ATOMIC ENERGY COMMISSION
TENNESSEE VALLEY AUTHORITY

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TENNESSEE VALLEY AUTHORITY

UNITED STATES
GOVERNMENT PRINTING OFFICE
63240 WASHINGTON : 1955

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MONDAY, MAY 23, 1955.

TENNESSEE VALLEY AUTHORITY

WITNESSES

GEN. HERBERT D. VOGEL, CHAIRMAN, BOARD OF DIRECTORS
DR. HARRY A. CURTIS, DIRECTOR
DR. R. R. PATY, DIRECTOR
A. J. WAGNER, GENERAL MANAGER
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JOSEPH C. SWIDLER, GENERAL COUNSEL
GEORGE K. LEONARD, CHIEF CONSTRUCTION ENGINEER
CHARLES H. YOUNG, MANAGER OF CHEMICAL ENGINEERING
HARRY L. CASE, DIRECTOR OF PERSONNEL
RICHARD KILBOURNE, DIRECTOR OF FORESTRY RELATIONS
L. J. VAN MOL, CHIEF BUDGET OFFICER
L. E. ELLIS, BUDGET STAFF

Amounts available for obligation

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate	$188,546,000	$120,000,000	$27,550,000
Carried to surplus, Public Law 149 (from prior balance returned from Tennessee Valley Authority fund)	−66,000		
Obligations incurred	188,480,000	120,000,000	27,550,000

Analysis of expenditures

	1954 actual	1955 estimate	1956 estimate
Obligations incurred during year (total expenditures paid into revolving fund)	$188,480,000	$120,000,000	$27,550,000
Expenditures are distributed as follows:			
Out of current authorizations	188,546,000	120,000,000	27,550,000
Out of prior authorizations	−66,000		

Consolidated amounts available for obligation

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1954 actual	1955 estimate	1956 estimate
Income:			
Transferred from general fund appropriation account	$188,546,000	$120,000,000	$27,550,000
Corporate income	160,578,863	216,877,000	248,329,000
Unobligated balances brought forward:			
Appropriated funds	15,974,362	52,266,056	14,259,000
Power proceeds	37,757,712	36,755,746	33,419,746
Nonpower proceeds	4,676,977	5,465,224	6,982,000
Continuing fund	1,000,000	1,000,000	1,000,000
Carried to surplus, Public Law 149	−66,000		
Total available for obligation	408,467,914	432,364,026	331,539,746
Retirement of borrowings	−5,000,000	−15,000,000	−14,000,000
Repayment of investment	−19,676,977	−40,465,224	−51,982,000
Unobligated balance carried forward:			
Appropriated funds	−52,266,056	−14,259,000	
Power proceeds	−36,755,746	−33,419,746	−37,516,746
Nonpower proceeds	−5,465,224	−6,982,000	−5,673,000
Continuing fund	−1,000,000	−1,000,000	−1,000,000
Total obligations	288,303,911	321,238,056	221,368,000

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
ACTIVITIES FINANCED FROM APPROPRIATED FUNDS (TRANSFERS FROM THE GENERAL FUND)			
Acquisition of Assets			
Navigation, flood control, and power program:			
Projects contributing to power supply:			
Boone	−$182,536	$189,000	
Fort Patrick Henry	1,731,887	446,000	
Additional hydro units:			
Pickwick 5 and 6	38,307		
Guntersville 4	−1,676		
Hales Bar 15 and 16	149,146	46,000	
Hiwassee 2	908,364	1,846,000	$310,000
Cherokee 3 and 4	63,982	50,000	
Chatuge 1	936,077	968,000	
Nottely 1	237,273	1,832,000	215,000
Fontana 3	205,249	3,000	
Douglas 4	692,150	354,000	
Johnsonville steam plant	1,268,900	378,000	−543,000
Widows Creek steam plant	7,154,360	2,289,000	101,000
Kingston steam plant	35,321,343	29,847,000	4,250,000
Shawnee steam plant	22,670,998	23,496,000	2,581,000
Colbert steam plant	15,084,584	21,006,000	2,354,000
John Sevier steam plant	23,919,975	28,176,000	7,228,000
Gallatin steam plant	17,243,403	28,949,000	9,369,000
Total projects contributing to power supply	127,441,786	139,875,000	25,865,000
Transmission system facilities	15,576,132	6,702,000	7,710,000
Power service building	105,473	450,000	
Additions and improvements at completed projects	1,355,662	1,072,000	468,000
Navigation facilities	236,129	412,000	406,000
Investigations for future projects	101,640	155,000	204,000
Distribution of administrative and general expenses	1,559,338	1,632,000	1,100,000
Total navigation, flood control, and power program	146,376,160	150,298,000	35,753,000
Fertilizer and munitions program:			
Chemical facilities	901,597	1,174,000	877,000
Distribution of administrative and general expenses	23,987	21,000	25,000
Total fertilizer and munitions program	925,584	1,195,000	902,000
General service activities:			
General facilities	−318,890	892,056	38,000
Distribution of administrative and general expenses	10,978	5,000	9,000
Total general service activities	−307,912	897,056	47,000
Total acquisition of assets	146,993,832	152,390,056	36,702,000

Obligations by activities—Continued

Description	1954 actual	1955 estimate	1956 estimate
ACTIVITIES FINANCED FROM APPROPRIATED FUNDS—con.			
Expenses			
Navigation, flood control, and power program:			
Navigation operations	$277,450	$272,000	$100,000
Flood control operations	130,058	137,000	166,000
Multipurpose reservoir operations	2,009,591	2,204,000	2,000,000
Distribution of administrative and general expenses	142,651	163,000	157,000
Total navigation, flood control, and power program	2,559,750	2,776,000	2,423,000
Fertilizer and munitions program:			
Fertilizer and munitions development	2,143,809	2,366,000	2,150,000
Distribution of administrative and general expenses	88,410	84,000	90,000
Total fertilizer and munitions program	2,232,219	2,450,000	2,240,000
Resource development program:			
Resource development	547,071	347,000	400,000
Distribution of administrative and general expenses	62,737	42,000	42,000
Total resource development program	609,808	389,000	442,000
General service activities: Maintenance of bridges financed by others on TVA dams	117	2,000	2,000
Total expenses	5,401,894	5,617,000	5,107,000
Changes in Working Capital			
Inventories and property transfers	−207,420		
Total activities financed from appropriated funds	152,188,306	158,007,056	41,809,000
ACTIVITIES FINANCED FROM CORPORATE FUNDS			
Acquisition of Assets			
Navigation, flood control, and power program:			
Projects contributing to power supply:			
Boone	7,373	1,000	
Fort Patrick Henry	71,734	4,000	
Additional hydrounit—Fontana 3	13,259		
Johnsonville steam plant	14,718	13,000	13,000
Widows Creek steam plant	49,983	7,000	
Kingston steam plant	258,940	164,000	71,000
Shawnee steam plant	304,350	220,000	13,000
Colbert steam plant	1,891	2,000	1,000
John Sevier steam plant	31,445	162,000	116,000
Gallatin steam plant	12,807	21,000	21,000
Total projects contributing to power supply	766,500	594,000	235,000
Transmission system facilities	25,032,032	28,225,000	27,984,000
Additions and improvements at completed projects	135,489	26,000	146,000
Investigations for future projects	145,818	233,000	188,000
Distribution of administrative and general expenses	332,582	432,000	667,000
Total acquisition of assets	26,412,421	29,510,000	29,220,000
Expenses			
Navigation, flood control, and power program:			
Power operations	78,342,155	104,338,000	120,194,000
Multipurpose reservoir operations	1,628,864	1,742,000	1,575,000
Distribution of administrative and general expenses	1,200,020	1,371,000	1,544,000
Total navigation, flood control, and power program	81,171,039	107,451,000	123,313,000
Fertilizer and munitions program:			
Fertilizer and muntions development	16,250,909	17,431,000	15,268,000
Distribution of administrative and general expenses	304,027	359,000	375,000
Total fertilizer and munitions program	16,554,936	17,790,000	15,643,000
Resource development program:			
Resource development	547,071	520,000	600,000
Distribution of administrative and general expenses	62,737	62,000	62,000
Total resource development program	609,808	582,000	662,000

Obligations by activities—Continued

Description	1954 actual	1955 estimate	1956 estimate
ACTIVITIES FINANCED FROM CORPORATE FUNDS—continued			
Expenses—Continued			
General service activities:			
Reimbursable services	$5,343,454	$3,978,000	$3,828,000
Distribution of administrative and general expenses	124,387	100,000	15,000
Total general service activities	5,467,841	4,078,000	3,843,000
Total expenses	103,803,624	129,901,000	143,461,000
Changes in Working Capital			
Inventories	5,899,560	3,820,000	6,878,000
Total activities financed from corporate funds	136,115,605	163,231,000	179,589,000
Obligations incurred	288,303,911	321,238,056	221,368,000
RECONCILIATION OF OBLIGATIONS TO ACCRUED EXPENDITURES			
Total obligations	288,303,911	321,238,056	221,368,000
Add change in unliquidated obligations	125,985,390	99,805,000	13,940,000
Total accrued expenditures	414,289,301	421,043,056	235,308,000
Add changes in inventories derived from appropriated funds	48,760		
Add transfers of property from other agencies	93,136		
Deduct changes in inventories derived from corporate funds	5,899,560	3,820,000	6,878,000
Total applied to programs (statement A)	408,531,637	417,223,056	228,430,000

SCHEDULE A–1.—*Obligations by objects*

Object classification	1954 actual	1955 estimate	1956 estimate
Total number of permanent positions	13,429	14,066	13,078
Full-time equivalent of all other positions	10,503	10,646	4,365
Average number of all employees	22,321	23,443	16,692
Number of employees at end of year	23,933	20,705	15,316
Average salaries and grades:			
Grades established by the Board of Directors:			
Average salary	$4,851	$4,963	$5,080
Average grade	TVA–4.3	TVA–4.4	TVA–4.4
Ungraded positions: Average salary	$4,058	$4,236	$4,416
01 Personal services:			
Permanent positions	$53,247,641	$60,003,416	$58,849,071
Positions other than permanent	59,997,415	59,348,529	23,676,543
Regular pay in excess of 52-week base	185,938	207,704	208,438
Payment above basic rates	4,639,024	4,589,932	4,660,946
Excess of annual leave earned over leave taken	331,761		
Excess of annual leave taken over leave earned		581	
Total personal services	118,401,779	124,149,000	87,395,000
02 Travel	1,138,793	1,225,000	1,176,000
03 Transportation of things	15,101,498	19,579,000	22,041,000
04 Communication services	796,213	827,000	794,000
05 Rents and utility services	1,700,700	1,519,000	1,283,000
06 Printing and reproduction	87,033	81,000	87,000
07 Other contractual services	24,756,497	17,129,000	5,782,000
Services performed by other agencies	3,073,570	5,702,000	4,659,000
08 Supplies and materials	60,634,506	99,256,000	83,890,654
09 Equipment	56,123,830	54,292,056	15,463,000
10 Lands and structures	2,088,153	1,614,000	1,424,000
11 Grants, subsidies, and contributions	7,645,246	8,363,000	8,512,000
13 Refunds, awards, and indemnities	131,527	53,000	52,000
14 Interest	694,050	460,000	335,000
15 Taxes and assessments	857,642	959,000	391,000
Undistributed (contingency)			100,000
Subtotal	293,231,037	335,208,056	233,384,654
Deduct allocated working fund obligations	4,927,126	13,970,000	12,016,654
Obligations incurred	288,303,911	321,238,056	221,368,000

Mr. RABAUT. We take up this morning the Tennessee Valley Authority and I presume, General Vogel, you have a statement to make?

General VOGEL. I have a brief opening statement.

Mr. RABAUT. The committee will be glad to hear you at this time.

GENERAL STATEMENT

General VOGEL. When Congress created the Tennessee Valley Authority in 1933 it gave legislative recognition to the fact that a river valley comprises a natural unit for the development of water resources. The Tennessee Valley Authority Act gathers the many functions of land and water management into a single assignment and directs a single Federal agency to undertake the responsibility for developing the river and the other natural resources of its valley. This is the only instance in which the Federal Government has vested comprehensive responsibility of this kind in one agency.

TVA's responsibilities for the development of land resources embrace such activities as the promotion of forest improvement and use, the development of agricultural resources, and fertilizer and munitions research and development. TVA operates a chemical laboratory and experimental production facilities at Wilson Dam, Ala., for the production of new and improved chemical fertilizers. These fertilizers are used entirely in education and demonstration programs. They have been instrumental in a substantial expansion of the use of fertilizers in improved agriculture and in stimulating a market for privately produced fertilizers which in a recent 15-year period expanded fourfold in the Tennessee Valley and doubled in the Nation as a whole. In addition, the plant is readily convertible to the production of munitions and, in fact, furnished 60 percent of all the elemental phosphorus used by our Armed Forces in World War II. I might interpolate here to state that the plant furnished 100 percent of all elemental phosphorus used by the Armed Forces during the Korean conflict. TVA operates a plant at Muscle Shoals for the Department of the Army which produces component materials for a product of the Chemical Corps. As requested by the Department of the Army, TVA's chemical facilities are used for research and development of munitions.

TVA's responsibilities for water resource development include the management of the Tennessee River for navigation and flood control and for the maximum generation of electricity consistent with these two purposes. To provide for the maximum development of the water resource, TVA gives attention in varying degrees to the secondary benefits—recreation, fish and wildlife, domestic and industrial water supply, control of malaria, pollution abatement, and soil conservation as it relates to water conservation. In conducting studies and surveys concerning these secondary benefits TVA cooperates to the fullest possible extent with all interested Federal, State, and local agencies.

The creating act also turned over to TVA for operation an existing Federal water control project, Wilson Dam and related facilities, built between 1918 and 1925. Since 1933 TVA has designed and built 20 dams—17 multipurpose projects and 3 single-use projects; it operates 7 hydroelectric projects purchased from the Tennessee Electric Power Co.; and, through a cooperative agreement with the

Aluminum Co. of America (Alcoa), directs the operation of 12 Alcoa hydro projects in the basin. The water control system of the Tennessee Valley contains 40 projects, all of them operated by TVA or at its direction. No other major river system in this or any other country is more completely controlled and so thoroughly utilized.

Navigation development is one of the major programs through which TVA fulfills its broad responsibilities for unified development of the area's resources.

The 9 mainstream dams on the Tennessee River each contains locks which permit navigation on a 9-foot channel from the Ohio River at Paducah, Ky., to Knoxville, Tenn., a distance of 650 river-miles. The Tennessee is a part of the inland navigation system of the United States which directly serves the commerce of some 20 States. River traffic on the Tennessee has expanded from 32.6 million ton-miles in 1933 to 1.25 billion ton-miles (estimated) in 1954, with savings to shippers in transportation costs in 1954 of about $14 million.

Since 1945, when construction of the channel was substantially completed by TVA, major attention has been given to encouraging the fullest use of the waterway. As a means of accomplishing this, TVA provides technical data to barge lines, industries, and others concerning channel conditions, reservoir operating schedules, transportation services, and the location of industrial waterfront sites. TVA also gives continuing attention to the need for improvements to navigation facilities and, when justified, designs and constructs them.

Cargoes on the waterway, all handled by privately owned barge lines, include grain from the Midwest; automobiles from Northern States; petroleum products from the Southwest and Midwest; steel from Pittsburgh and Chicago; fertilizer to the Midwest; coal from Illinois, Kentucky, Indiana, and Tennessee; and salt and sulfur from the gulf coast.

Although TVA has the responsibility for developing navigation on the Tennessee River, I think it is important to note that the Corps of Engineers operates and maintains the navigation locks and maintains dredged cuts and safety harbors. It also keeps official records on river traffic. With TVA, it reviews proposed structures in or along the river to determine their effect on navigation. The two agencies maintain close liaison, work in close harmony and, along with the Coast Guard, which maintains navigation aids on the main channel, conduct regular inspections of the channel, locks, and navigation aids.

Flood control is one of the important benefits resulting from the Tennessee River reservoir system. The basic act lists flood control as the No. 2 purpose after navigation. The average annual rainfall in the Tennessee River Basin is about 51 inches. Nearly half the year's total occurs between December and April and floods are likely to occur during this period. The control of such floods is a major factor in planning, designing, constructing and operating the dams and reservoirs of this system.

TVA's multipurpose reservoir system provides approximately 14,600,000 acre-feet of useful controlled storage, of which 11,802,000 acre-feet are reserved for flood storage as of January 1 of each year. In other words, we enter into the calendar year with capacity to take care of what may be expected reasonably to follow. This stor-

age capacity provides flood protection to urban, industrial, and agricultural areas along the Tennessee and its tributaries and is an important influence on flood conditions along the lower Ohio and Mississippi Rivers. Savings in flood damage at Chattanooga, Tenn., alone have amounted to over $53 million since 1936. Flood crests on the Ohio at Cairo, Ill., have been reduced by as much as 1.9 feet by regulation of the flow of the Tennessee. The effectiveness of existing levees guarding some 12 million acres on the lower Mississippi and Ohio has been improved by control of the Tennessee. That was exemplified during the recent high water on the Ohio this past spring, when our people were in close contact with the Corps of Engineers' representatives and held water in the Kentucky Reservoir. I will come to that in a moment.

Section 7 of the Flood Control Act of 1944 directs TVA, in the case of danger from floods on the lower Ohio and Mississippi Rivers, to "regulate the release of water into the Ohio River in accordance with such instructions as may be issued by the War Department."

TVA aids the Corps of Engineers to control floods on the lower Ohio and Mississippi. For example, on March 10, 1955, as the Ohio River flood crest approached Paducah, Ky., TVA controlled the release of water at Kentucky Dam so as to enable the Corps of Engineers to regulate the flood crest on the Ohio. TVA's control of the flow of the Tennessee reduced the crest at Paducah, Ky., during the critical hours. The gaps in the protective floodwall at Paducah did not need to be closed. Rail and road traffic passed through the gaps as usual with no expensive and inconvenient disruption.

The cities and towns lying along the Tennessee are substantially protected by the TVA reservoir system but some spots along the river need additional physical improvements of a local character to provide them with complete protection. Such locations are Chattanooga, Tenn., and Asheville, N. C. TVA has investigated and reported on flood problems at both of these cities and has found protective works economically justified. Independent surveys by the Corps of Engineers agree with conclusions reached by the TVA.

The great floods have been brought under substantial control in the Tennessee Valley, but even so, many communities have serious flood problems that are not entirely eliminated or even reduced by TVA's flood control system. Floods serious in their local effect occur on streams subject to flash floods and on streams too far from the main river system to be benefited by the flood control reservoirs. In many such instances protection by reservoir storage or levees is not economically feasible and delays often occur while the communities try to secure such construction by the Federal Government.

In the meantime, the solution to the community's flood problem is delayed and may be made more severe by the encroachment of housing and industrial developments into areas where the flood danger is high. To help correct this situation TVA is furnishing basic flood height information to State planning groups and local communities which they can use immediately to help find methods of minimizing flood damage as alternative or supplementary to controlling floods by the construction of protective works.

Once these facts are reviewed with the communities so that they understand their flood problem, TVA helps them consider methods of preventing flood damage—methods which can be worked out without

undue delay, which are within their means, and which often will require no investment of Federal funds. Some of the methods involve extension of zoning regulations to cover areas subject to flooding so that restrictions are placed on locating housing and industrial developments in flood danger areas. Flood data are taken into account in locating roads, utilities, and other improvements. The Federal Housing Administration and the Veterans' Administration are taking TVA flood data into account in considering approval of subdivisions. Other agencies interested in public housing, slum clearance, real estate development, and financing as well as State highway and industrial departments are using these data too.

In connection with its responsibility for the electric power supply in an 80,000 square mile area, TVA is now producing power at 6 large modern steam plants which it has completed or has under construction and at 5 smaller plants which it acquired. Two other large steam plants now under construction will soon be producing power. TVA also operates over 9,600 circuit-miles of transmission lines.

The total capacity of TVA's hydro and steam plants is 6,795,250 kilowatts (March 31, 1955). The total capacity of the TVA system, which includes the hydroplants of the Aluminum Company of America on the Little Tennessee and the Corps of Engineers on the Cumberland, is 7,619,185 kilowatts. During fiscal year 1954 TVA disposed, of 30.7 billion kilowatt-hours, 41 percent of it to Federal agencies, including the Atomic Energy Commission, the Arnold Engineering Development Center at Tullahoma and the Department of the Army, installations primarily in the vicinity of Muscle Shoals. In 1933 the entire area now served by TVA used 1.5 billion kilowatt-hours.

In its power operations TVA acts as a producer and wholesaler of electricity, selling to major installations of other Federal agencies, directly served major industries, and to municipal, cooperative, and privately owned distribution systems. The TVA Act requires that preference in the sale of power be given to State and local agencies and to cooperative organizations for the particular benefit of domestic and rural consumers.

The hydropower produced at the Corps of Engineers projects in the Cumberland Basin is distributed over the TVA system. Under section 5 of the Flood Control Act of 1944, the Secretary of the Interior, through the Southeastern Power Administration, is responsible for the marketing of that power. The entire power output of the three projects thus far completed on the Cumberland is sold by SEPA to TVA for distribution under the same policies TVA employs in distributing TVA-generated power.

Mr. Chairman, that concludes my general opening statement concerning TVA's statutory responsibilities for development of water resources in the Tennessee River Basin and, if there are no questions at this time, I would like to ask that Mr. Wagner, our General Manager, be called upon to summarzie our program plan.

Mr. RABAUT. Mr. Cannon.

Mr. CANNON. Mr. Chairman, some years ago it was my good fortune to be in Panama and, while there, General Vogel's kindness and courtesy made my stay very pleasant and informative. So I take advantage of this opportunity to express my appreciation of his service on that occasion and my pleasure at seeing him again across the table.

From the general statement it is evident we are dealing with a rather unique subject and it occurs to me, Mr. Chairman, there may be members of our committee who are not intimately familiar with the matters with which the estimates deal and we might have a little background before we take up the various features of his statement.

SERVICE OF KEY PERSONNEL

General Vogel, how long have you been associated with the Tennessee Valley Authority?

General VOGEL. I took my oath of office on the 1st day of September 1954, sir.

Mr. CANNON. And, Dr. Curtis: How long has he been with the Tennessee Valley Authority?

General VOGEL. Dr. Curtis had better tell you himself. He has been there for a long, long time in many capacities.

Dr. CURTIS. I came to TVA in the fall of 1933 in the capacity of Chief Chemical Engineer. Then I was away for 10 years at the University of Missouri and I came back as a member of the Board in February of 1949.

Mr. CANNON. Dr. Paty?

Dr. PATY. Three years this coming 4th of July.

Mr. CANNON. Mr. Wagner?

Mr. WAGNER. I have been with TVA since July 16, 1934, Mr. Chairman.

Mr. CANNON. Mr. Wessenauer?

Mr. WESSENAUER. September 1935.

Mr. CANNON. Mr. Kampmeier?

Mr. KAMPMEIER. August 1933.

Mr. CANNON. Mr. Swidler?

Mr. SWIDLER. November 1933.

Mr. CANNON. Mr. Leonard?

Mr. LEONARD. December 4, 1933.

Mr. CANNON. Mr. Young?

Mr. WAGNER. Mr. Young is not here this morning.

Mr. CANNON. About how long has he been with the Authority?

Dr. CURTIS. Since July of 1933.

Mr. CANNON. Mr. Case?

Mr. WAGNER. Mr. Case is not here. I believe he has been with TVA since about 1934 or 1935.

Mr. CANNON. Mr. Kilbourne?

Mr. WAGNER. Mr. Kilbourne is not here this morning. I think somewhere in the middle thirties. I can get that information for you, if you would like to have it.

Mr. CANNON. Just approximately.

Mr. WAGNER. I would say approximately 1934 or 1935.

Mr. CANNON. Mr. Van Mol?

Mr. VAN MOL. February 1936.

Mr. CANNON. Mr. Ellis?

Mr. ELLIS. August 1937.

Mr. CANNON. Mr. Chairman, there is one thing that stands out here to the credit of TVA and of the personnel, that they have had long associations with TVA.

Mr. RABAUT. That is right.

Background of TVA System

Mr. Cannon. By way of background, Mr. Wessenauer, this is a prodigious enterprise; it is rather unique. Would you say it is the largest in the world of its kind?

Mr. Wessenauer. It is among the largest; yes, sir. It is the largest in the United States in the production of power.

Mr. Cannon. And production of power, of course, is one of the objectives in which we are interested.

Tell us briefly, Mr. Wessenauer, something of the development of the system, its size, location, and functions.

Mr. Wessenauer. I will be glad to do that, sir. Would it be helpful if I pointed out some of these projects on the map?

Mr. Cannon. That would be helpful.

Mr. Wessenauer. The Tennessee River from its mouth at Paducah, Ky., to Knoxville, Tenn., at the head of navigation, covers a distance of some 650 miles. The main river has been developed by nine major multiple-purpose projects. Those 9 projects provide a 9-foot navigation channel for a distance of 650 miles. The projects also have flood-storage capacity which assists in flood control along the main stem of the Tennessee River; in the Kentucky Reservoir there is a large storage capacity reserve to hold back the high waters of the Tennessee and, as General Vogel explained earlier, it assists in the control of the floods in the lower Ohio and lower Mississippi Rivers.

Each of those projects have hydroelectric capacity installed for the production of electricity. There are 5 major tributaries of the Tennessee and on those tributaries are located some 19 projects owned by TVA; there are also 12 owned by the Aluminum Co. of America. Each of the major tributaries has on it a large storage reservoir utilized primarily for holding back and storing the high waters during the winter and spring months and from which the waters are released during the low-water period later in the year. That provides flood control and low-water regulation for navigation, and it enables the production of power not only at those projects, but at all of the ones on the stream down below.

I might point out those major storage projects on the tributaries. Norris Dam on the Clinch, Cherokee Dam on the Holston, Douglas Dam on the French Broad River, Fontana Dam on the Little Tennessee River, and Hiwassee Dam on the Hiwassee River.

I mentioned the projects of the Aluminum Co. of America. They are all located in the Little Tennessee River Basin. The five major ones are shown on this chart. There are several small ones, also located on that stream or its tributaries.

Corps of Engineers' Projects

In addition, the hydropower of the Cumberland is connected into the TVA system. The Corps of Engineers is developing the Cumberland River (which is at the top of this map). The three major dams now in operation are Wolf Creek Dam, Dale Hollow, and Center Hill. TVA also owns a plant on the Cumberland River, Great Falls Dam, which was owned formerly by the Tennessee Electric Power Co., the

title coming to the TVA when the properties of that company were sold to TVA and the local distributors of TVA power. Power from the projects of the Corps of Engineers, as General Vogel explained earlier, is disposed of through the Department of the Interior and specifically the Southeastern Power Administration, which has contracted with TVA to sell the entire output of those plants to TVA to distribute it over the TVA system along with power generated by TVA projects.

CAPACITY OF POWER PROJECTS INSTALLED

The total hydrocapacity now in service is just under 3.5 million kilowatts, of which about 500,000 kilowatts are located on the Cumberland River. There are also in operation as part of this system some 13 steam stations—thermal-electric generating stations. Six of those were acquired from companies which were operating in the area at the time of the acquisition of their properties by TVA and the distributors—in 1939, or later. Another one of them was the old steam plant at Wilson Dam, built in connection with the hydroproject at that location.

TVA has built and put in operation six major steam projects. The first one was the Watts Bar steam plant, built early in World War II. Since that time there have been put in operation the Johnsonville steam plant, the Widows Creek steam plant, the Shawnee steam plant, the Colbert steam plant, and the Kingston steam plant. The capacity of all those steam plants at the moment is about 4.3 million kilowatts. So that, as of today, the total installed capacity of the power system—hydro and steam—is 7.8 million kilowatts including Alcoa plants and Corps of Engineers plants on the Cumberland.

CAPACITY OF POWER PROJECTS UNDER CONSTRUCTION

Just a word about the projects now under construction. We are adding 60,000 kilowatts of hydro capacity in the Hiwassee Dam. The unit that is being installed is a very unusual unit in that it is a pump-storage unit, capable of generating power by water released from the reservoir, and capable of pumping water from the river below back into the reservoir whenever that is the desirable thing to do. That would occur by pumping water back at night and letting it out in the daytime to produce power to help carry the heavier load in the daytime. We are also adding capacity at the Nottleby project—one of the storage reservoirs above Hiwassee Dam, built initially for flood storage. A 15,000-kilowatt unit is being added at that project.

The other hydro capacity being made available in the area consists of projects of the Aluminum Co. of America, which recently secured a license from the Federal Power Commission to build the Chilhowee project, and which has one other small project just about completed. The two together will add some 60,000 kilowatts to the hydro capacity of the system.

As you perhaps learned from earlier discussions with the Corps of Engineers, there are two large projects under construction on the

Cumberland River: the Cheatham project which is to help provide navigation up to Nashville, and the Old Hickory Dam, which will provide for possible navigation further up the river. Those projects would add some 136,000 kilowatts of hydro capacity.

TVA has construction under way of added units at steam plants already in operation, and has two new steam plants still under construction. One new plant is the John Sevier steam plant in upper east Tennessee. We expect the first unit of that plant to be in operation around the middle of the year. The other large plant under construction is the Gallatin steam plant on the Cumberland River, where the first unit will go into operation the first part of next year. The steam capacity under construction is about 2 million kilowatts. So we have a system, with the hydro construction under way and the steam construction under way, that will have a capacity of a little over 10 million kilowatts. Just by way of comparison, the capacity in this area in 1933 was about 815,000 kilowatts.

DAMS OPERATED PRIMARILY FOR NAVIGATION AND FLOOD CONTROL

The multipurpose dams are designed and operated, in accordance with the TVA Act, to give priority to navigation and flood control. I might illustrate how that affects power production. During most winters there are periods when there is more water in the Tennessee River than can be used through the turbines at the main river dams. Some of that water might be stored in the main river reservoirs and used to generate power later when the streamflow is not as great. But that water must be released, and not stored for power generation because the reservoir storage space all up and down the main river is reserved for flood control and is filled only during floods. As soon as a flood passes, that water is released and the storage space is again made available for future floods.

In a similar way, we have a system of tributary reservoirs. Some of their storage capacity is also reserved for flood control the year around, like the main-river storage. A further portion of their storage capacity is reserved for flood purposes in accordance with a seasonal pattern. But in some winters it is necessary to spill a lot of water to maintain the flood storage space. For example, in the winter of 1951–52, after the floodwaters were stored at some of those reservoirs, the reservoir levels were above the levels that we hold for flood storage, so the water was released and the equivalent of about 800 million kilowatt-hours was spilled down the river. As it turned out, the next 3 years were very dry years and that water would have been very valuable. In fact, at times we had to buy energy that cost as much as 10 mills a kilowatt-hour. This spring we had another instance where water was released from the reservoirs which later could have generated about half a billion kilowatt-hours.

I cite those examples to show that these projects are operated as they were intended, primarily to serve flood control and navigation. As an example of operation primarily for navigation, it is necessary at a project like Pickwick Dam to maintain releases throughout the day. Last summer it would have been preferable from the standpoint of power to concentrate the releases during the daytime hours, but the navigation requirements dictated otherwise and they were fulfilled.

TVA POWER SERVICE AREA

I trust that gives a rather quick picture of the river, of the steam and hydroplants and their locations and operation. I might point out that this shaded area on the map represents the area in which the power is being distributed to the people in the region. It is an area of approximately 80,000 square miles. That area is about twice the size of the Tennessee drainage basin, which is not delineated but which is indicated by where the river is and where the headwaters are located. You will note that in some parts of the Tennessee drainage basin TVA power is not available and that there are places outside of the Tennessee drainage basin where TVA power has been made available; as an example, TVA's first power customer was the city of Tupelo, Miss., which is located outside of the Tennessee drainage basin. The population within that power service area is approximately 5 million.

Power is distributed by TVA in this manner: TVA generates and transmits the power, and sells it in wholesale quantities. The distribution function is primarily handled by local agencies. There are 150 local agencies—97 municipalities, 51 cooperatives, and 2 private companies—which buy power from TVA at wholesale and resell it to approximately 1,300,000 consumers located in this service area.

I might point out that the power service area was determined by the preference of the people in the local areas. The act provides that power from these projects may be made available within transmission distance of the hydroprojects. Within that statutory provision the choice as to where the power was to be made available was determined by local communities or groups of farmers who elected to do the necessary things to put themselves in a position to buy power from TVA under standard contracts and resell it.

COORDINATED OPERATION OF TVA DAMS FOR ALL PURPOSES

Mr. CANNON. Mr. Chairman, it is evident that this agency has many functions, and, apparently, some of these functions are in conflict. For example, in order to have available sufficient water for power, a certain level must be maintained.

On the other hand, in order to provide flood control, the water level must be kept sufficiently low to have room for excess water. There is a line of demarcation, I take for granted, between the water required for power and the space required for flood control.

Mr. WESSENAUER. Yes, sir; but not entirely a fixed line. In some reservoirs like the ones in the upper Holston River, we do have a level line above which the entire storage is reserved for flood storage the year around. That is true also of the Kentucky reservoirs. In other——

Mr. CANNON. That leaves you sufficient water to produce needed power?

Mr. WESSENAUER. That is right.

General VOGEL. Mr. Chairman, our people have worked out over a period of years, as a result of practical experience and long records of the rainfall in that region, what are known as rule curves for each of these reservoirs so that for each season of the year they are able to tell what would be a safe level to hold the water at, in order to provide available space above that for flood storage, coincident with that particular season.

So I feel that we are really bringing very closely together these problems of flood control, navigation, and power which, normally, are, as you say, pretty much in conflict with one another. But there has been a formula arrived at, as a result of experimental work over a period of time, whereby that has been achieved.

Mr. CANNON. You have developed, then, a routine or formula under which you coordinate both power and flood control?

General VOGEL. Yes, sir. I might point out that it is not always satisfactory to everyone else though, because as you can well realize during a prolonged drought period, such as we have had for the past several years, it has been necessary to draw these lakes down in some instances far more than we would like. That has not intruded upon the flood-control purposes, but it has, in order to create economical power, drawn down the lakes to a level where those people who enjoy using them for recreation and fishing have been a little bit disappointed. However, you cannot always please everyone, and I think you understand that.

Mr. CANNON. It has in no respect limited either function?

General VOGEL. Well, there is a limitation, but I do not think it has any marked diminution of the purposes of the project.

RETAIL DISTRIBUTION OF TVA POWER

Mr. CANNON. Going back to the original plan of operation and the development of the system, Mr. Wessenauer, TVA itself does not retail power. The power is retailed through various distribution systems?

Mr. WESSENAUER. Yes, sir.

Mr. CANNON. With how many distribution systems do you deal?

Mr. WESSENAUER. There are about 150 local distribution systems.

Mr. CANNON. What is the division of responsibility as between the TVA itself, and these various 150 systems of distribution?

Mr. WESSENAUER. TVA generates the power and carries the power over high-voltage transmission lines to points of delivery which are located in the areas of these various distribution systems.

You might speak of it as being delivered to the city gate. There, the community receives the power. It builds the necessary lines within the community, or in the rural areas, and carries it to the individual users in the homes and on the farms and in the factories of its particular service area.

We have a contract relationship with those distributors by which they agree to carry out the purposes of the TVA Act, the purposes as expressed by the Congress in the act, that the power should be made available widely, and at the lowest cost in order to encourage its use in the development of the region.

Mr. CANNON. Developed to the utmost, you have a tremendous capacity there.

Mr. WESSENAUER. If I might take a minute, I would like to tell you something about the development and use of the power in this region over the past 22 years.

Mr. CANNON. That would be in point.

GROWING USE OF ELECTRICITY ON THE FARM

Mr. WESSENAUER. Perhaps the most dramatic increase in the use of power has been in the rural areas and on the farm.

In 1933 less than 3 percent of the farms in the area had electricity. That amounted to about 15,000 farms. Today, in the same area, there are 440,000 farm homes served with electricity through this system.

The use of electricity on farms in the year 1933 was only 9 million kilowatt-hours. Today, the farm use is about 1.5 billion kilowatt-hours a year, or a growth of 170 times.

I am sure many of you appreciate the importance of having electricity brought to the farm and what it has meant to the life of those people and in their daily farm activities.

Mr. CANNON. Especially the farm wife.

Mr. WESSENAUER. Yes; I was reminded the other day about a woman who had a water system put in her home. She said, "Getting this water system is going to be just like heaven." The fact that she no longer had to carry water was very important to her.

I think one of the greatest benefits has been that the farmers have electricity with which to pump their water. That means not only in the farm home, where it is possible to have running water and plumbing facilities, but also on the farm itself, where the farmer can pump water in adequate quantities for the cattle, for other uses in his dairying operations, and so forth.

These farms now also have refrigeration, which is another very important factor, and one that has meant much to the farmers.

I would say that around 90 percent of these farm homes which now have electricity now have refrigerators. And, of course, use of the freezer, which has meant that their methods of preserving foods and the economies which they can have in the use of their food, has increased tremendously.

About half of them have an electric range. Getting rid of the old wood stove has meant quite a bit to the farmer's wife. Not so many of them have electric water heaters yet, but an increasing number are installing them.

The farmer himself now can use electricity in such ways as grinding his feed and drying his hay. He can now do a better job in his dairying operations, since he can have adequate water supplies, and refrigeration, and hot water, so that he has a better rating as a dairyman than he would have without electricity.

Just to summarize, one farmer said that the coming of electricity to the farmers has been like a long, steady rain after a long dry spell.

General VOGEL. Mr. Chairman, may I interrupt a moment?

Mr. CANNON. If you will.

General VOGEL. While I wish to concur entirely in what Mr. Wessenauer has said, I think it is desirable that there not be left in the minds of any of the members of the committee, or anyone else, the impression that the people of the Tennessee Valley constitute in any way a benighted group who have not been able to do things for themselves.

Mr. CANNON. If you took that view of it you would include the people of the Missouri Basin.

We have been particularly neglected, and have greatly profited from the use of electricity on the farm.

General VOGEL. That is the point which I desired to make.

Mr. CANNON. I was down at Mount Vernon yesterday with some guests, and we came to the washhouse, where the laundry work of the Washington household was handled. There was a group of women standing there in front of the door, and one of them was saying, "think of having to carry all the water in and out, with all of the backbreaking labor on those wash boards." Another said "we do not realize how fortunate we are, and how much electricity has contributed to this generation."

They were city women, and of course, on the farm the problem is infinitely worse, and the contribution of electricity immeasurably greater.

In other words, Mr. Wessenauer, TVA has wrought a tremendous change both on the farm and in the city—not only in comfort and the standard of living, but in economical production.

Would you say, within the area served by TVA, it has brought to the average TVA family a higher standard of living, and to the Nation a more economical production?

Mr. WESSENAUER. Well, I spoke of the farmer, and the ability to use much more electricity than he was able to use 20 years ago, and the same thing is true in all other phases of life in the Valley.

DEVELOPMENT OF POWER USE IN THE TVA AREA

For example, take the average use of all the residents, farm and urban. In 1933 those homes that had electricity used only 600 kilowatt-hours each, on the average, and now the average use is over 5,000 kilowatt-hours a year in the TVA area. And where there were only 225,000 homes and farms using electricity in 1933, today there are over 1,200,000. The residential use of electricity, in total, has grown about 46 times during that time.

In business and industry, approximately 1¼ billion kilowatt-hours were used in 1933 and today that use has grown to 13.5 billion or some 11 times.

The fact that the worker and the home user and others have more energy at their command, means that they can do things more quickly and more easily. They have more time to engage in other things. In general, this has reflected itself in increased prosperity in the region.

A lot of people contributed in working this out. It took not only the availability of power, but it took the work of the local agencies to build the distribution lines to carry the energy out to the farmers. It meant that the appliance dealers had to get busy and sell the appliances, and to get the farmers to use them and to explain how they could be used. It takes an education process as to how it can best be done.

I would like to call attention, also to the work of the REA and the rural cooperatives. We believe our early experience was very helpful to REA. In turn, the fact that REA was established in 1935 and made money available to be loaned to farm groups to build these distribution lines at favorable interest costs, has been a very important factor in bringing this about.

Mr. CANNON. It is a matter of common knowledge that TVA services not only families and individuals and private industry, but that it has rendered also great service to the Government, to public enterprise, and especially to national defense.

Can you give us a little information on that?

Mr. WESSENAUER. I have spoken thus far primarily of the use of power by the people in the region, exclusive of the large use of power by the Federal Government itself.

Back in 1933, the amount of power used by Federal establishments in the region was insignificant. Today the requirements of Federal establishments in the region are over 3.5 million kilowatts.

Last year, they used 16.7 billion kilowatt-hours, primarily at the large installations of the Atomic Energy Commission at Oak Ridge and Paducah, but also at Redstone Arsenal, at the wind tunnel project at Tullahoma, Tenn., at Fort Campbell, at the Muscle Shoals development works, and so forth.

Now, I think you are right, Mr. Chairman, that the availability of this power has had a value to the Nation as a whole. We have been able to make it available at low rates, and I think that our low rates were influential in the arrangement which the Atomic Energy Commission was able to make with other suppliers. We have not attempted to determine the savings to the Atomic Energy Commission. I believe that agency will use about 45 billion kilowatt-hours a year, and you can see that a saving of 1 mill per kilowatt-hour would amount to a saving of $45 million a year.

That is one of the factors which has benefited the Nation.

Mr. CANNON. I recall, that when one of the last dams was built down there, there was considerable debate about it, and a good deal of division of opinion over it. The Senator from Tennessee, Senator McKellar, who up to that time had been the noted champion of TVA, was opposed to the building of this particular dam.

Finally, however, we decided to build the dam.

I was told afterward that but for that dam, we would have been hampered in the production of aluminum. As I understand it, the processing of bauxite in the production of aluminum requires a tremendous amount of electric power.

Mr. WESSENAUER. Yes, it does, sir. It requires about 9 to 10 kilowatt-hours per pound.

Mr. CANNON. But for the addition of this dam, our efforts during the last war would have been hampered in the production of aluminum for airplanes.

Mr. Krug, who advocated the construction of the dam, later became Secretary of the Interior, and later on my good friend, Senator McKellar, conceded the correctness of his position.

Then, in 1945, when we had taken Okinawa at tremendous cost—the number of men who died there far exceeded anything we had anticipated—we squared away to take Tokyo. At a time when it seemed we faced another sacrifice of thousands of men, a single airplane with a single bomb ended the war.

So, it is impossible to estimate the value of the contribution of TVA to national defense.

Mr. WESSENAUER. And, also, sir, the power that went into the atomic bomb itself. You will recall that some of that power produced at Douglas Dam and the other projects went into Oak Ridge.

Mr. CANNON. In the production of both the plane and the bomb TVA contributed an indispensable service.

We could not have produced the bomb without the vast voltage provided by TVA.

Mr. WESSENAUER. Well, a lot of the projects which the Appropriations Committee authorized during the war period provided the power which went to Oak Ridge in large quantities, from which the bomb material was prepared.

FINANCIAL RETURNS OF TVA

Mr. CANNON. Will you also give us some information on the matter of financial experience in the development of this great system—something about the investment in money made by the Federal Government.

Could you tell us about the capital invested and the earning history of TVA?

Mr. WESSENAUER. Well, I will try to summarize it for you, Mr. Chairman.

I shall use figures for the last fiscal year; that is, through June 30, 1954, and I assume your question relates to the power investment only. The investment in power facilities which were in use as of June 30, 1954, was a little over $1 billion—$1,026 million. Of that amount, approximately $786 million, or about three-fourths of it——

Mr. PHILLIPS. How much?

Mr. WESSENAUER. $786 million, sir, or about three-fourths of it, represented the net investment of appropriated moneys and moneys that were received from the sale of bonds which were held by the Treasury.

The remaining one-fourth was provided from the earnings of the power system and reinvested in the facilities.

Over the 21-year period from 1933 to 1954, the earnings of the power system have averaged annually about 4 percent of the average investment which has been devoted to the production of power.

Mr. CANNON. Could you say, also, that the production of power is the least lucrative of its activities?

Mr. WESSENAUER. No; I would not say that, sir.

Mr. CANNON. Is it the more lucrative?

Mr. WESSENAUER. Well, the other activities of the TVA are not directed to provide revenues.

Mr. CANNON. I was under the impression that the wholesale distribution was the less lucrative part of your power operation.

Mr. WESSENAUER. I misunderstood you, sir. Yes, sir; that is true. TVA's wholesale operations are less lucrative than the retail operations of the local distribution agencies.

Mr. CANNON. And, still, notwithstanding that fact, it has averaged 4 percent?

Mr. WESSENAUER. Yes, sir; it has averaged a 4-percent return.

Mr. CANNON. What would then be the average interest on Government bonds today?

Mr. WESSENAUER. Well, interest on all Government borrowings today average about 2 percent, and have for some time.

Mr. CANNON. Would you say that under those circumstances it is paying as much as might be expected from the average safe investment?

Mr. WESSENAUER. Well, I think that the earnings of 4 percent is a fair return on the investment, in light of the purposes which this program was designed to achieve.

Mr. CANNON. That would dispose, then, of claims that TVA is subsidized?

Any enterprise which produces the cost of operations, and incidental charges and still pays 4 percent above that could hardly be said to be subsidized.

Mr. WESSENAUER. I do not believe it is subsidized; that is correct.

Mr. CANNON. So, claims sometimes advanced that TVA is subsidized are apparently without foundation?

TVA'S RECORD OF REPAYMENTS

I have before me on page 119 of the justifications, furnished the committee, schedule C–1, entitled "Repayment of Investment in Power Program Under Provisions of the Government Corporations Appropriations Act, 1948."

Will you point out from that tabulation the financial situation as you have just now outlined it?

Mr. WESSENAUER. I might preface my remarks by pointing out the footnote on that table. The TVA Act provides under section 26 that there shall be paid into the Treasury power proceeds not needed in the conduct of the business. So, prior to 1948 TVA had paid into the Treasury or had retired bonds which had been issued for power purposes, to the extent of some $23.6 million.

In connection with the Appropriations Act covering the year 1948, a provision was incorporated which requires payment within a period of 40 years from the date a facility is placed in service of an amount equal to the cost of that facility.

This table records for you since that date the amount of money which has been paid in to the Treasury in accordance with that plan. I believe Mr. Jensen was on the committee at the time the plan was adopted.

Mr. JENSEN. Yes; I wrote that provision myself.

Mr. WESSENAUER. The law required certain minimum payments to be made, which are shown cumulatively in the second column of the table, marked "Total."

Mr. PHILLIPS. Is that information contained on page 119 of the justifications?

Mr. WESSENAUER. Yes, sir. The first column, in other words, contains the minimum annual requirements under the act. It says that not less than $2.5 million shall be paid each year on the retirement of the bonds, and the second column records cumulatively what that would be. For purposes of comparison, however, I think it would be more interesting to see how much money we would pay if we paid in each year one-fortieth of the appropriation investment. In other words, while the act does not require a uniform payment——

Mr. CANNON. That is your amortization requirement—one-fortieth?

Mr. WESSENAUER. Well, it requires that within 40 years the total shall be paid. It does not say one-fortieth each year.

Mr. CANNON. But, it is an average of one-fortieth?

Mr. WESSENAUER. Yes, sir.

Mr. CANNON. If you averaged one-fortieth through the years, at the end of 40 years, you have met your objective?

Mr. WESSENAUER. We have met the requirement; yes, sir.

Through 1954, which is the fiscal year I have been speaking of, one-fortieth per year would have required a total payment of $66 million by that time. We had actually paid into the Treasury and retired bonds in the amount of $77.5 million, which is shown by the last column of the table.

So, you will note that we are ahead of schedule. In the fiscal year we are now in, we have budgeted a payment totaling $50 million, all of which will be paid by June 30. So, that by the end of this current fiscal year, we will have paid in $127.5 million, as contrasted with a total of $87.6 million on the basis of a 40-year schedule. We have included in this budget estimated payments of $59 million out of our earnings for the fiscal year 1956. We have $14 million worth of bonds held by the Treasury, which we propose to retire soon after June 30, and the remaining $45 million would be paid into the Treasury during the course of the fiscal year 1956. So, that would bring the payments to a total of $186.5 million by the end of the next fiscal year. But, if you add to that the $23 million which was paid prior to the time that amendment was enacted, it would total something over $210 million.

I think this might be interesting to you in considering that amount of money that will have been paid into the Treasury from power proceeds. That sum of $210 million would more than cover all of the appropriations and bonds which were invested in TVA power facilities completed through fiscal year 1941. From the creation of TVA through fiscal year 1941, or up to this country's entrance into World War II, the Congress had invested in TVA, in plant in service, either through the purchase of TVA bonds by the Treasury or through appropriations, approximately $195 million. That $195 million covered the construction of the portion allocated to power of all of these dams and the reservoirs, with their initial generating units: Wilson, Wheeler, Norris, Guntersville, Pickwick, Chickamauga, and Hiwassee, as well as all the facilities of the Tennessee Electric Power Co. purchased by TVA, both generation—steam and hydro—and the transmission lines.

So, that is just a rough measure as to how this amount of repayment in accordance with this plan is related to the investment made in past years.

Mr. CANNON. That is very impressive, and rather conclusive.

FINANCIAL RECORD OF DISTRIBUTORS OF TVA POWER

We have been dealing up until now with the wholesale end of the business.

When we turn to the power distributors who have the more lucrative end of the business, what would be the situation there?

As I understand it, they receive a larger return than the 4 percent produced in the wholesale end of the business.

Mr. WESSENAUER. Yes, sir; they have been able to show a larger rate of return. They have an investment in total assets of approximately $420 million, where TVA has at the present time, or at the end of last year, roughly $1 billion. They take in revenues of about $130 million a year, and they have about $100 million of expenses in buying power from TVA and paying for the operations of their distribution systems and allowing for depreciation.

So, they have a net after those expenses of $100 million, of roughly $29 million, which in relation to their investment would mean a return in the neighborhood of 8 percent.

Of course, they do not all equal 8 percent. The municipalities on the whole have a higher rate of return because of the concentration of their operations, and the cooperatives have a lower rate of return.

TVA REPAYMENT OF INVESTMENT IN POWER PROGRAM

Mr. CANNON. Mr. Chairman, if agreeable, I would like to have included into the record at this point this table given on page 119 of the justifications.

Mr. RABAUT. Without objection, we will insert the table on page 119 of the justifications.

(The table referred to follows:)

SCHEDULE C–1.—*Repayment of investment in power program under provisions of the Government Corporations Appropriation Act, 1948*

Fiscal year	Minimum repayments required under 1948 law		¼₀ of plant investment at end of previous year		Actual and budgeted payments [1]	
	Year	Total period	Year	Total period	Year	Total period
1948	$10,500,000	$10,500,000			$10,500,000	$10,500,000
1949	2,500,000	13,000,000	$8,705,981	$8,705,981	5,500,000	16,000,000
1950	2,500,000	15,500,000	8,705,981	17,411,962	5,500,000	21,500,000
1951	2,500,000	18,000,000	9,149,627	26,561,589	9,000,000	30,500,000
1952	2,500,000	20,500,000	9,733,970	36,295,559	12,000,000	42,500,000
1953	2,500,000	23,000,000	12,256,316	48,551,875	15,000,000	57,500,000
1954	2,500,000	25,500,000	17,482,476	66,034,351	20,000,000	77,500,000
1955	2,500,000	28,000,000	21,592,868	87,627,219	[2] 50,000,000	[2] 127,500,000
1956	2,500,000	30,500,000	[2] 31,424,781	[2] 119,052,000	[2] 59,000,000	[2] 186,500,000
1958		87,059,810				
1968		174,119,620				
1978		261,179,430				
1988		348,239,240				
1990		365,985,080				
1991		389,358,811				
1992		490,252,655				
1993		699,299,057				
1994		863,714,733				
1995		[2] 1,257,000,000				
1996		[2] 1,451,400,000				
1997		[2] 1,462,496,000				
1998		[2] 1,472,346,000				

[1] In addition to repayments under the provisions of the Government Corporations Appropriation Act, 1948, bond redemptions of $8,572,500 and other repayments of $15,059,019 were made prior to fiscal year 1948.
[2] Estimated.

DISTRIBUTION OF TVA POWER

Mr. CANNON. In regard to this matter of partnership, Mr. Wessenauer, between the TVA and these distributors, you would say the business partnership between TVA and the distributors has been in every way successful?

Mr. WESSENAUER. Yes, sir; I think it has been very successful. They have done an excellent job on their part of this overall undertaking. As I pointed out earlier, just producing the power does not do much good unless it actually gets out to the people who are going to use it.

Their part of the overall undertaking is to accept the power at various points, and distribute it. They have built over 104,000 miles of rual lines; they have extended service in their communities, and they have made this power available to the people at low rates. That has been brought about by the fact that they and we have been able to keep our costs down through mass production, and have been able to produce, transmit, distribute, and sell power at about half of what the average costs per kilowatt-hour have been for the industry.

NATIONAL EFFECTS OF TVA POWER PROGRAM

Mr. CANNON. Will you summarize some of the national aspects of the program, Mr. Wessenauer, separate and apart or, rather, as in addition and supplementary to the phase of it which you have just been discussing?

What about the national effect, and what about the effect on rates elsewhere, and what about the effect of stimulating service on a national basis?

Mr. WESSENAUER. There have been some important national effects. Certainly one effect has been the demonstration of what can be done as a result of encouraging greater use at low rates. As I indicated earlier, average residential use in the valley has increased from 600 to 5,000 kilowatt-hours a year, while the national average use per residential customer has grown from 600 to 2,500 kilowatt-hours a year. The difference largely reflects the differences in rates. In that connection, if you will study the rates in areas adjacent to TVA, you will find that they are much lower than in the areas more distant from TVA. That is also true of the Northwest.

Another place where our experience has been helpful is in stimulating the use of power in the rural areas.

I spoke about our Tennessee Valley situation in 1933, with only 3 percent of the farms served, but the national picture was not a whole lot better, because only 11 percent of the Nation's farms had electricity in 1933.

Mr. CANNON. How does that compare with the situation today?

Mr. WESSENAUER. Today it is well over 90 percent, with the TVA area now a little ahead of the rest of the country. A lot of that was the result of the work of REA and other agencies. However, prior to REA, some of TVA's experiences were very helpful. For example, the TVA Act encouraged TVA to bring electricity into the rural areas. We started out around Wilson Dam in northern Alabama, in the south central part of Tennessee, and in the northeastern part of Mississippi, to see how to best serve the rural areas. We built some power lines and developed standards as to how to build cheaper lines into the rural areas.

TVA made loans to local agencies, as authorized in the act, for them to build lines. We helped in the establishment of one of the first cooperatives, the Alcorn County Cooperative in northeastern Mississippi.

Mr. CANNON. It has been effective?

Mr. WESSENAUER. Yes, sir. It has not only been successful, but since that time has reduced the rates at which it retails the power below the low rates with which we started in that area.

The Prentiss County Cooperative is another example of the cooperatives we helped bring into operation prior to REA.

Mr. CANNON. Those rates have been reflected outside of the area throughout the country generally.

Mr. WESSENAUER. Yes, sir.

Mr. CANNON. The very fact that TVA has demonstrated what can be done, and how it can be done, has resulted in improvement throughout the Nation?

Mr. WESSENAUER. Well, the standards, for example, some of our engineers devised in connection with those early rural lines were subsequently utilized and improved upon by the REA engineers.

The example of a willingness to serve rural people, and the encouragement to use large amounts of electricity in making farm operations profitable, and thereby incidentally making the rural distribution of electricity profitable, has encouraged people to do that elsewhere. All of that has been helpful, and our experience has been picked up and used elsewhere.

Another national advantage which we covered earlier, Mr. Chairman, was the fact that the low rates under which TVA made power available to AEC enabled them, I believe, to make better arrangements with other suppliers elsewhere. As I pointed out, a mill per kilowatt-hour on their total annual use of 45 billion kilowatt-hours amounts to $45 million a year, which is not a small amount.

Another way in which TVA has been helpful has been as a general stimulus to the national economy through the great number of electrical appliances and equipment sold in the Tennessee Valley area. Just since the war, people in the Tennessee Valley region have bought over 4 million major appliances, and they have paid $1.5 billion for them. Most of those appliances have not been produced in the Tennessee Valley but in many States outside of that area.

Mr. CANNON. You now have reference to national industry?

Mr. WESSENAUER. That is right.

Mr. CANNON. And national production?

Mr. WESSENAUER. Yes, sir; just to take an illustration, most everyone wants a room cooler. In 1951 there were 7,000 room coolers sold in the area, and in 1952 that number had climbed to 25,000, and in 1953 to 60,000.

At the present time there is a market each year for $250 million worth of electrical appliances in the Tennessee Valley.

TVA PURCHASES OF MATERIALS AND EQUIPMENT IN OTHER THAN TVA STATES

In addition to that, there is also the material and equipment which goes into the generation, transmission and distribution facilities which we and our partners, the local agencies, are building in order to supply this increasing use of electricity. Most of that equipment, well, I would say 60 percent of TVA's own purchases, for example, are made outside the region, in other States.

Mr. CANNON. It is not a local matter, and it is not a provincial matter. It is national in its effect upon business, and upon the national income, and standard of living?

Mr. WESSENAUER. That is right. I think a lot of people have the impression that the amount of money which has been invested by the Government in the TVA system has all been spent in the Tennessee Valley, but a great deal of it is spent elsewhere.

Mr. CANNON. The tabulation which the committee requested from TVA shows purchases made in the valley States, and purchases in other States.

In the Valley States, the States immediately adjacent, Alabama, Georgia, Kentucky, Mississippi, North Carolina, and Tennessee and in the other States which could have no geographic connection with it. It is surprising to find that of the majority of the raw materials, such as coke, coal, aggregates, sulphur, miscellaneous services, truck and team hire, office space and equipment, more business has been brought to States outside of TVA than to the TVA States themselves.

For example, let us take the State of Pennsylvania: What does the table show as to business derived directly from and through the operations of TVA?

Mr. RABAUT. In 1954, $19,647,931, and a total in 1934 to 1954 of $288,156,583.

Mr. CANNON. Pennsylvania was not part of the TVA project and still as a result of the TVA it has brought Pennsylvania over $288 million in business.

I see my good friend here from the great State of Rhode Island. What are the figures on Rhode Island?

Mr. RABAUT. $165,972 this year and $1,973,808 over the period. It is almost $2 million.

Mr. PHILLIPS. It is not clear what the figure is.

Mr. RABAUT. This map shows what is bought in each State by the TVA, by the procurement sources—TVA procurement sources for fiscal years 1934 to 1954.

Mr. PHILLIPS. What do you mean by TVA procurement sources?

Mr. RABAUT. What they purchased from the States, exactly, such as the automobiles, what they buy from each State of the Union.

Mr. PHILLIPS. The TVA alone, TVA and its distributors, or TVA, its distributors and all the individual houses?

Mr. RABAUT. We will get that answer from Mr. Wessenauer, then.

Mr. WESSENAUER. I believe that table shows the amount of money spent by TVA to purchase equipment and material in those respective States.

Mr. PHILLIPS. TVA alone and not its distributors?

Mr. WESSENAUER. That is right.

Mr. PHILLIPS. For what kind of equipment and for what purpose?

Mr. WESSENAUER. For all of the purposes of TVA. That would include materials and equipment for construction of these projects and the necessary materials and supplies in connection with their operations.

Mr. PHILLIPS. Mr. Wessenauer used the expression "Ithink." Could this be confirmed? It seems as if that might include some of the purchases of the distributors.

Mr. WESSENAUER. I am certain, Mr. Phillips, that it is only the TVA purchases.

Mr. RABAUT. Is this based on statistics?

Mr. WESSENAUER. Yes, sir.

Mr. PHILLIPS. I notice one omission, Mr. Chairman, if I may. There is nothing down there for how much they purchased outside the United States.

Mr. RABAUT. Yes, there is, down at the bottom of the map—$523,233.

Mr. RABAUT. What is that for, Mr. Wessenauer?

Mr. WESSENAUER. I don't have it in mind right now, what those specific purchases were.

Mr. RABAUT. Could you supply it for the record?

Mr. WESSENAUER. Yes.

Mr. RABAUT. All right. Supply it for the record.

(The information requested is as follows:)

The following summarizes TVA purchases through domestic suppliers of materials manufactured or processed in foreign countries:

Country	Item	Total 1934–54
Belgium	Steel [1]	$18,560
England	Steel [1] and miscellaneous	54,930
France	Steel [1] and miscellaneous	11,330
Germany	Nitric acid plant equipment [2] ($384,276), repair parts, and miscellaneous.	387,650
India	Burlap	15,545
Switzerland	Stop watches, timers, oscillograph, repair parts, and miscellaneous.	10,985
Austria, Brazil, Canada, Cuba, Czechoslovakia, Denmark, Holland, Italy, Japan, Mexico, Scotland, Sweden.	Miscellaneous	24,233
Total		523,233

[1] Purchased with NPA approval during Korean period when demand exceeded domestic supply.
[2] In 1953 a nitric acid unit was purchased from domestic companies for $765,662, including imported absorption tower equipment amounting to $384,276; ECA and NPA approved.

SUMMARY OF TVA PROCUREMENT SOURCES

Mr. RABAUT. I think we ought to insert this map and these TVA procurement sources in the record at this point.

(The information referred to is as follows:)

TVA procurement sources, 1934–54

	1954	Total (1934-54)
Valley States:		
Alabama	$9,913,413	$109,393,458
Georgia	2,012,599	25,982,613
Kentucky	15,401,255	121,538,153
Mississippi	951,062	7,993,689
North Carolina	507,111	13,250,231
Tennessee	50,289,053	335,593,202
Virginia	214,893	7,783,988
Total valley States	70,289,386	621,535,334
Other States:		
Arizona	44,035	115,353
Arkansas	128,425	1,154,594
California	646,381	9,294,073
Colorado	137,585	1,068,353
Connecticut	652,306	6,699,773
Delaware	3,032,628	17,924,458
District of Columbia	49,661	2,388,153
Florida	827,274	6,616,527
Idaho	407	2,302,060
Illinois	4,846,403	92,233,522
Indiana	719,257	18,885,996
Iowa	154,212	1,454,127
Kansas	94,085	554,499
Louisiana	958,868	8,831,276
Maine	264,067	479,021
Maryland	352,394	5,980,969
Massachusetts	1,731,321	38,060,736
Michigan	1,307,734	18,009,066
Minnesota	489,235	7,675,479
Missouri	1,904,724	25,303,027
Montana	1,431	165,813
Nebraska	20,752	480,430
Nevada	823	136,461
New Hampshire	142,024	1,586,722
New Jersey	1,905,522	37,953,165
New Mexico	4,151	46,091
New York	10,792,256	140,027,452
North Dakota	24	54,009
Ohio	9,959,076	119,071,865
Oklahoma	534,273	2,782,616
Oregon	130,861	1,514,263
Pennsylvania	19,647,931	288,156,583
Rhode Island	165,972	1,973,808
South Carolina	207,448	1,840,364
South Dakota	10,641	707,091
Texas	1,039,090	5,239,519
Utah	17,399	2,804,728
Vermont	37,483	174,124
Washington	7,563	1,209,331
West Virginia	165,099	3,414,226
Wisconsin	3,953,344	58,552,608
Wyoming	56	28,937
Total other States	67,084,221	932,951,258
Foreign	10,887	523,233
Total	146,384,494	1,555,009,825

EFFECT OF TVA OPERATIONS ON PRIVATE UTILITIES

Mr. CANNON. There seems to be an unfortunate tendency at times to take the view that anyone who favors TVA is opposed to the private utilities. My experience has been to the contrary, that TVA and REA have been an advantage to private utilities rather than a disadvantage. I would be glad if you would tell us about the effect of the operation of the TVA on the private utility companies.

Have they suffered losses as the result of TVA? Has their business at the end of the 5 or 10 years shown an increase or decrease and are their profits shown to be more or less by reason of TVA?

WASHINGTON $1,209,331
OREGON $1,514,263
CALIF. $9,294,073
NEVADA $136,462
IDAHO $2,302,060
MONTANA $165,813
WYOMING $28,937
UTAH $2,804,728
ARIZONA $115,353
COLORADO $1,068,353
NEW MEXICO $46,091
NORTH DAKOTA $54,009
SOUTH DAKOTA $707,091
NEBRASKA $480,430
KANSAS $554,499
OKLAHOMA $2,782,616
TEXAS $5,239,519
MINNESOTA $7,675,479
IOWA $1,454,127
MISSOURI $25,303,027
ARKANSAS $1,154,504
LOUISIANA $8,831,276
WISCONSIN $58,552,668
ILLINOIS $92,233,522
MICHIGAN $18,009,066
INDIANA $18,885,996
OHIO $119,071,865
KENTUCKY $121,538,153
TENNESSEE $335,595,202
MISS. $7,993,689
ALABAMA $109,393,458
GEORGIA $25,982,613
FLORIDA $6,616,527
SOUTH CAROLINA $1,840,364
NORTH CAROLINA $13,250,231
VIRGINIA $7,783,988
WEST VIRGINIA $3,414,226
PENNSYLVANIA $288,156,583
NEW YORK $140,027,452
MD $37,953,165
DEL $5,980,969
D.C. $17,924,456
N.J. $38,060,756
CONN. $6,699,773
R.I. $1,973,808
MASS. $1,586,722
VT $174,124
N.H.
MAINE $479,021
Foreign - $523,233
Total - $1,555,009,825
TVA PROCUREMENT SOURCES
FISCAL YEARS 1934-1954

Mr. WESSENAUER. That is a broad question, Mr. Chairman. I think the record is clear that the utilities of the Nation have grown and developed during the past 20 years as the Nation has grown and developed. In other words, there has been a tremendous increase in power requirements throughout the Nation. The use of power has grown at a rate in the neighobrhood of 7½ percent a year, so they have grown and expanded, and their earnings also have grown and increased.

I think perhaps I might be a little more responsive to your question by telling you that we made a check recently on the earnings of the systems immediately adjacent to TVA, where you might expect——

Mr. CANNON. Yes. That is where the disadvantage would show up, if at all, in the neighboring States.

Mr. WESSENAUER. Yes.

Mr. CANNON. Take the State of Mississippi, immediately adjacent on the south. Would you say the private companies in Mississippi or any of the companies immediately adjoining the area served by the TVA have suffered as the result of TVA competition or as the result of maintenance and operation of the TVA system?

Mr. WESSENAUER. The figures I have may be of interest in response to your question, Mr. Chairman. These figures are from 1937, and you might take 1937 to 1939 as a base period because it is after the depression period and when earnings were more normal, and yet before the establishment of a major service area for TVA power. If you contrast with that period the last year of which I have a record, 1953, the common stock earnings of the private companies in the Nation as a whole have increased by 2⅓ times. I should say it is now 2½ times what it was in 1937, 1938, 1939.

Mr. CANNON. And that is a rather phenomenal increase for such an operation?

Mr. WESSENAUER. I would like to give you a more phenomenal increase if I may, Mr. Chairman.

Mr. CANNON. Yes.

Mr. WESSENAUER. The nine companies in the area contiguous to TVA show in that same period of time an increase in common-stock earnings to 5⅘ times.

Mr. RABAUT. Greater than the rest?

Mr. WESSENAUER. They have grown much faster than in the country as a whole.

Mr. CANNON. That is rather convincing.

Mr. WESSENAUER. I think that would indicate that they have made good progress and you can hardly say that we have adversely affected their earning capacity.

Mr. JENSEN. You are speaking now of the companies which did survive, are you not?

Mr. WESSENAUER. I am comparing the companies in the area immediately adjacent to TVA, sir.

Mr. JENSEN. Which survived after the TVA was established?

Mr. WESSENAUER. I am speaking about companies which are now operating in the area immediately contiguous to the area shown on the map, sir.

Mr. RABAUT. For what period?

Mr. WESSENAUER. From 1937 to 1953, sir.

Mr. CANNON. May I say, Mr. Chairman, in this connection—and it seems to me I have heard Mr. Jensen say the same thing—I am

unalterably opposed to the Federal Government monopolizing the production and distribution of electric power. I think it is a matter for private enterprise, but we should maintain REA and TVA as a yardstick so that in case anyone attempts to impose upon the consumer either in the city or in the country unfair rates or terms, you will have a standard, a criterion to measure what is a fair price or terms or service.

I will say, too, Mr. Chairman, I am opposed to any subsidy for the REA, or any loan made to REA cooperatives which is not justified on strictly business principles.

Mr. JENSEN. REA, Mr. Chairman, is not subsidized and no one contends REA is subsidized.

I will get into that matter when I get to my questioning.

Mr. CANNON. We are discussing the whole thing here. I for one am unalterably opposed to the Federal Government monopolizing this business. The vast bulk of it, should be handled by private industry and private utilities. But TVA, REA, and a relatively few municipalities which at this time maintain their own systems should be allowed to survive to show at what rate electric power should be provided for both the cities and the country, what character of service should be provided, and what improvements can be made in the production and distribution of power, either by private or public agencies.

Mr. Chairman, I have here a graph which has been prepared by the Director of Information, Tennessee Valley Authority, on TVA's influence on electric rates. I would be glad if he took this chart, No. 4, and briefly explained the graph.

Mr. WESSENAUER. This chart shows information similar to that which I gave a few moments ago. It shows that by 1952 the total common-stock earnings of all class A and B utilities in the United States have increased to about 210 percent of their 1937–39 earnings.

The corresponding common-stock earnings of companies contiguous to the TVA, some 9 companies, have increased to something over 500 percent of what they were in 1937–39.

Mr. JENSEN. Isn't that an average of all private business increase? Isn't that just a fair average?

Mr. WESSENAUER. I am using here, Mr. Jensen, the comparison of the utilities contiguous to TVA as contrasted to the average for the Nation, and showing that those contiguous to TVA have grown in earnings twice as fast as the Nation as a whole as far as utilities are concerned.

Mr. JENSEN. Because they were able to buy your cheap TVA power? Is that the reason?

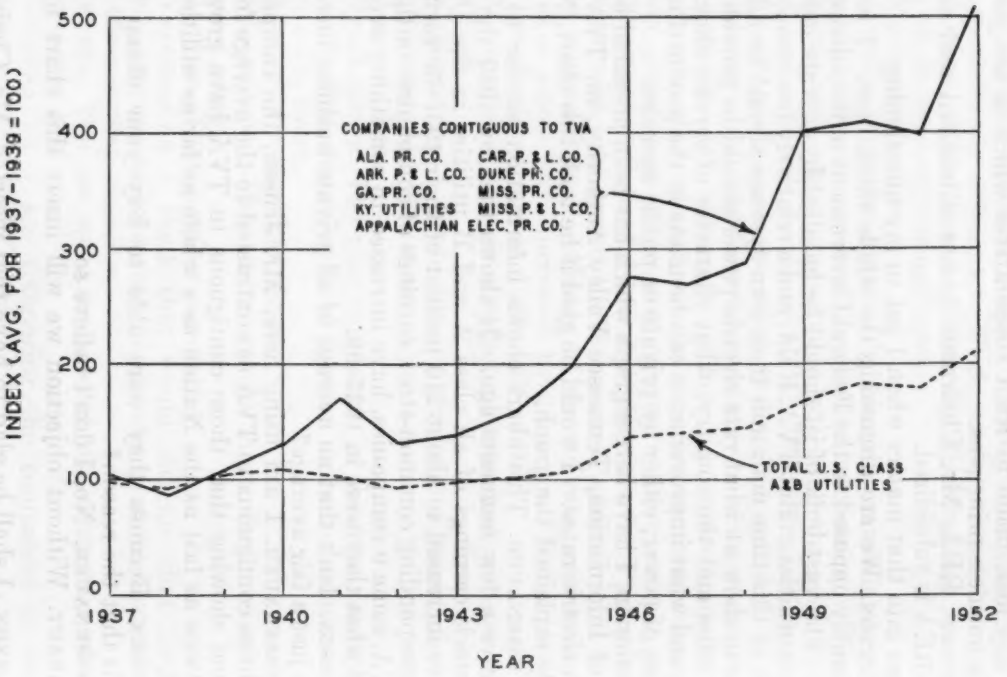
Mr. WESSENAUER. No, I don't believe so.

Mr. RABAUT. Without objection we will insert this chart in the record.

Mr. CANNON. I shall be glad to have that inserted, Mr. Chairman.

(The chart referred to is as follows:)

CHART IV
TREND OF POWER COMPANY COMMON STOCK EARNINGS



The low rates charged by the privately owned utilities adjacent to the TVA area, whether they are low by TVA example or by TVA competition, have not retarded the growth in the companies' common stock earnings. From 1937, the earliest year for which Federal Power Commission data are available, to 1952, the record shows that earnings available to the common stockholders of the larger privately owned power companies in the United States a little more than doubled and similar earnings of the companies adjacent to TVA increased fivefold.

PROVISION FOR FUTURE LOAD GROWTH

Mr. CANNON. Necessarily a far-reaching project of this character cannot stand still. Consumption of electricity has everywhere increased beyond anything anticipated by economists or technicians. The demand for power is immeasurably more than could have been foreseen a few years ago. It takes some time to develop these facilities. If we are to meet the situation, we will have to think about the future.

What arrangement have you made with that in view? Are you adjusting the system for future needs as well as to the present needs of the area?

Mr. WESSENAUER. Well, sir, we try to look ahead, as every prudent power system operator should, because electricity is so important in the other activities of any region.

Mr. CANNON. Undoubtedly there will be growth.

Mr. WESSENAUER. Oh, yes, sir. As I pointed out earlier, this area has been growing at an average rate of about 13 percent a year, exclusive of the AEC load. This year the rate of growth of the general loads of the area is at that level, at least, and, in fact, is more rapid than it has been in the last few years.

Because it takes 2½ to 3 years to build new power generating capacity, every system must look ahead in its planning and start construction of new capacity early enough so that it will be in a position to meet the loads of the people 2 or 3 years hence.

Mr. CANNON. With that in view, what new capacities have been recommended by the Administration in the last year?

Mr. WESSENAUER. The budget which you have before you in behalf of the TVA provides money to continue work at the projects which we now have under construction. It does not provide for the starting of any new capacity.

As I pointed out earlier, we have a little over 2 million kilowatts of capacity now under construction, which we hope to have completed in the main by the end of next year.

Mr. CANNON. And beyond next year?

Mr. WESSENAUER. There is no provision for capacity beyond next year in this budget insofar as construction by TVA is concerned.

A plan was devised a year ago whereby, in order to meet the requirements beyond next year, in lieu of building capacity on the TVA system, the Atomic Energy Commission would arrange to reduce the loads which we are supplying to it at Paducah and procure the power from another supplier.

That reduction in AEC's use of TVA power was to be 600,000 kilowatts as proposed in the President's budget of a year ago. Since that time arrangements have been made by the Atomic Energy Commission for the construction of a plant, commonly known as the Dixon-Yates plant, and when the project is completed that amount of Dixon-Yates power would be substituted for power now being delivered AEC from TVA's Shawnee steam plant. That part of the Shawnee power would become available to handle the loads of other users in the Tennessee Valley region.

Mr. CANNON. Is that not the only preparation which has been made to meet this increase?

competition, have not retarded the growth in the companies' dividend stock earnings. From 1937, the earliest year for which Federal Power Com... earnings of the companies adjacent to TVA increased fivefold.

Mr. WESSENAUER. No, sir. The President in his budget this year, and I would like to turn to it if I may, indicated that the TVA was developing other means of financing its future construction requirements.

If I might read this brief paragraph from the budget:

> The Tennessee Valley Authority Board recognized the need for developing some method of financing further expansion of the TVA power system by means other than appropriations from the Federal Treasury and is giving immediate and serious attention to the problem. The authority has been requested to complete its studies in time to permit presentation to the Congress for its consideration at this session of a satisfactory plan for future financing of additional power plants.
>
> In the light of these factors no provision is made in this budget for starting additional power generating units. It is expected that the power needs for the TVA system will be reexamined after Congress has had an opportunity to consider legislation to provide for future financing.

I believe that explains the reasons the President did not incorporate any request for new starts in this particular budget.

Mr. CANNON. You received no funds to start new capacity last year?

Mr. WESSENAUER. That is correct. That is when the reduction in AEC's use of TVA power was proposed.

Mr. CANNON. You have no source of capital other than the earnings and appropriations, and you are prevented by law from starting new projects with earnings?

Mr. WESSENAUER. That is correct.

Mr. CANNON. That leaves you no practical arrangement to meet the load ahead of you?

The President's budget proposed that the AEC load, which TVA is under contract to provide, should be reduced by as much as 600,000 kilowatts.

AEC was to reduce its demand on TVA by as much as 600,000 kilowatts?

Mr. WESSENAUER. That is correct, sir.

Mr. CANNON. As an alternative to the appropriation of funds for new capacity. Has that been accomplished?

STATUS OF DIXON-YATES ARRANGEMENTS

Mr. WESSENAUER. The status at the present time is that the contract has been executed between AEC and the Mississippi Valley Generating Co., whereby that company would undertake to build a plant which would supply 600,000 kilowatts to the TVA system in the vicinity of Memphis, which TVA in turn would deliver to the AEC at Paducah.

That contract is now in litigation. The State of Tennessee and some municipalities, including Memphis, are asking the courts to review the orders of the SEC which authorized the issuance of common stock by the company. The SEC has not authorized the company to sell its bonds.

So far no arrangements have been worked out between TVA and AEC for handling the power over the TVA system. We have been in negotiations for some months over those arrangements.

As of the moment we still have a firm contractual commitment to supply AEC the full 600,000 kilowatts from our system, and until

the other arrangements are worked out between us, I assume that commitment stands.

Mr. CANNON. It is rather remarkable, that no arrangement has been made, suggested, or attempted in order to relieve TVA of its contractual obligations. It is under contract to supply AEC and still we have failed to provide facilities by which it can carry out that contract and also failed to relieve it of the responsibility of that contract.

Mr. WESSENAUER. We are in this situation: We have a commitment to supply the 600,000 kilowatts to AEC at Paducah. There is some uncertainty as to when the 600,000 kilowatts from the new plant will become available to our system in the Memphis area. The uncertainty arises in part because, as I pointed out, the Dixon-Yates contract is in litigation with respect to the order of SEC on the issuance of the stock, and so far the bond issues have not had approval from the SEC.

There is no requirement in the AEC contract with the Mississippi Valley Generating Co. that the company must meet any certain date for beginning the supply of the 600,000 kilowatts. So we are sort of in between, having a commitment to continue to supply AEC the power with no assurance as to when the Dixon-Yates power will become available which was supposed to replace our supply to AEC.

Mr. VOGEL. I might throw some light on the status of negotiations between TVA and AEC as to the modification of the existing contract between those two organizations which has to do with a supply of power from our Shawnee plant to their plant at Paducah.

Those negotiations are based upon an agreed upon principle that TVA shall pay only for the benefits which it receives.

That general principle has been enunciated by the executive branch of the Government and has been worked toward by the two organizations in negotiation.

There are many difficulties, of course, in modifying a contract as complicated as that, and there are many technical problems to be solved.

We had considerable pressure on that——

Mr. CANNON. The original contract itself has not been modified?

Mr. VOGEL. The Shawnee contract, sir?

Mr. CANNON. Yes. It has not been modified?

Mr. VOGEL. No, sir; it has not.

Mr. CANNON. As I understand it, while the President suggested in his message the basis for the development of the Dixon-Yates agreement, and AEC has made a contract to purchase power from Dixon-Yates, no agreement has been reached between AEC and TVA which would result in the utilization of that power on the TVA system as a replacement for the power TVA is under contract to furnish AEC from the Shawnee plant.

Mr. VOGEL. The very fundamental agreement has been reached that TVA, acting as a wheeling agency will not pay charges that are outside of the benefits received by TVA, so that there should be no cost upon TVA in connection with this modification.

The exact details, as I say, have not been worked out, but there would appear to be no great urgency for that because it is only necessary that such formality be completed by the time that the MVGC plant goes into operation, which will be some years hence.

Mr. CANNON. How long hence?

Mr. VOGEL. That is figured for the end of the year 1957.

Mr. CANNON. What plant is that?

Mr. VOGEL. MVGC, the so-called Dixon-Yates plant.

Mr. CANNON. I read in this morning's newspaper, and I neglected to bring a copy with me, where the whole proceedings has been stalled by action in the courts. That the State of Tennessee has brought action which will delay construction of the steam plant to such an extent it is impossible at this time to say when it might be available.

Mr. VOGEL. Not being a lawyer, sir, I would not pass upon that one way or the other.

Mr. CANNON. That is a very vital consideration.

Mr. VOGEL. Yes, sir.

Mr. CANNON. Here is this growing load right ahead of us which must be met, unless there is to be disaster in our national economy. We have to have this power, and still the only thing which has been suggested here or in the President's message is this Dixon-Yates contract. The building of the plant which is to supply this power is stalemated in the courts.

It has not yet been decided in the lower courts and, according to the statement reported in this morning's paper by the attorney general of the State of Tennessee, it in all likelihood will be carried up to the Supreme Court.

In the meantime, building of a plant or the production of power is so far in the future, and so contingent that nobody can say anything dependable about it.

We must meet this power demand, and apparently the only way we can meet it is through the TVA.

I would like to ask Mr. Wessenauer what is being done. What prospect is there that TVA will be able to carry out the contract which has been imposed upon it?

I would also like to ask, even if litigation does not delay the program, What about the situation at Memphis?

The Memphis Commercial Appeal for May 21, reports:

> Memphis tells TVA it won't purchase Dixon-Yates power. Mayor indicates the city will build its own plant if necessary.

Summarizing the whole thing, Mr. Wessenauer, with the utter lack of probability that Dixon-Yates will have a plant to produce this power within the foreseeable future, and the refusal of the city of Memphis to accept this power as the mayor states in this morning's paper, what about that situation?

Mr. WESSENAUER. I can perhaps tell you what the picture is in-so-far as our requirements are concerned.

I described to you earlier this morning the amount of capacity which is now under construction.

I pointed out that with completion of that capacity we would have an installed rated capacity in the neighborhood of 10 million kilowatts.

But allowing for the operating reserves which you must have on the system, the plants when completed would be capable of carrying a load of about 9½ million kilowatts.

Mr. PHILLIPS. Do you refer to those presently authorized and under construction?

Mr. WESSENAUER. Yes, sir. We estimate the load in the winter of 1956–57 will be about 9 million kilowatts.

A year later it will be about 9,800,000 kilowatts, and in the winter of 1958 it will be about 10,600,000 kilowatts.

We have been counting upon the reduction of this load by the 600,000 kilowatts through the Dixon-Yates arrangements.

Obviously if the plant is delayed we will face a problem of not having the amount of capacity necessary to meet the power requirements for 1957 and 1958.

IMPORTANCE OF THE MEMPHIS LOAD IN THE DIXON-YATES ARRANGEMENTS

Mr. CANNON. To bring this down specifically to the immediate problem which confronts us, I have a letter here from the mayor of the city of Memphis discussing this matter.

I would like to ask you, in order to tie it in with what has gone on before, in what way is the plan for construction of the Dixon-Yates plant dependent on acceptance by the city of Memphis of power generated in the plant which Mr. Vogel just mentioned?

Mr. WESSENAUER. It might help if I would take a little time to explain the plan which has been worked out.

AEC and Dixon-Yates contemplated, rather than for AEC to secure the power from a company near Paducah delivering the power directly to AEC, that because of the large load which TVA has in the Memphis area, and inasmuch as we proposed to build a plant in that area, they might better put the plant across the river from Memphis. They planned to feed the power into TVA system there, thereby supplying the Memphis load with part of that power, and TVA would be asked to consider that power as replacing power we would continue to supply out of our plant at Shawnee into the AEC plant at Paducah.

Obviously if Memphis were not to use the power, the plan of having a company build a plant near Memphis instead of near Paducah has little merit because the effect would be that the Government would be paying to haul coal from west Kentucky down to West Memphis, Ark., and then hauling the power back over transmission lines up to west Kentucky. The premise on which the plan was worked out by those who developed it was on the basis that Memphis would use the power.

Mr. CANNON. It is then essential?

Mr. WESSENAUER. I believe so.

Mr. CANNON. And without it the whole plan disintegrates?

Mr. WESSENAUER. As I say, it would have no merit.

LETTER FROM THE CITY OF MEMPHIS

Mr. CANNON. At the request of the committee, the TVA office sent us a copy of Mayor Tobey's letter. I have it before us.

Mr. Chairman, with your consent I would like to insert this letter as part of the record.

Mr. RABAUT. Letter from whom?

Mr. CANNON. Letter from the mayor of the city of Memphis, Mayor Tobey, in response to a request addressed to him on April 5, 1955.

Before I introduce it, however, if the chairman will permit, let me read parts of it.

Mr. PHILLIPS. Read the whole letter, please, so we know what is in it.

Mr. CANNON. This is by Mayor Tobey:

DEAR GENERAL VOGEL: This is in response to your letter of April 5, 1955, in which you state that the Bureau of the Budget wishes to know the intent of the city of Memphis with respect to accepting power generated at the proposed Dixon-Yates plant in Arkansas.

That is the matter we have been discussing, and the acceptance of this power by the city is essential.

I am glad to have the opportunity of setting out fully Memphis' position with regard to the Dixon-Yates arrangement, and the whole matter of future power supply.

Here is the paragraph I would like to have Mr. Wessenauer give us some information on——

Mr. JENSEN. Can we have the whole letter read?

Mr. CANNON. I am reading it now.

Mr. JENSEN. All right.

Mr. CANNON (reading):

As for Dixon-Yates, the position of the city of Memphis has, from the outset, been clear and unequivocable. It is inconceivable that Memphis should be dependent upon a source of power which is clearly inconsistent with the continued growth and development of our community.

Anyone who is familiar with the relationship of public utility service to the welfare and health of a community knows perfectly well that no community should be made to rely upon a source of power which is produced by a system foreign to that community, and which for obvious reasons has no responsibility for its economic development.

I would like to ask you, Mr. Wessenauer, in view of this paragraph——

Mr. PHILLIPS. Could not the letter be read?

Mr. CANNON. I will read the rest in time.

Mention is made here that the Dixon-Yates system would be foreign to the community. In what respect, Mr. Wessenauer, would it be foreign to the community?

Mr. WESSENAUER. I am sorry, sir, but I am not sure I could interpret Mayor Tobey's reasons.

Mr. CANNON. The mayor of the city of Memphis here says it would be foreign to the community, and that any such source would be therefore deleterious to any city under similar circumstances.

In what way is the Dixon-Yates system foreign to the community?

Mr. WESSENAUER. The plant is presumably being built to supply power to AEC under contract between AEC and this company, and the contractual arrangements upon which its delivery to Memphis would depend is between two parties, that is between AEC on the one hand and this company on the other, which have no concern about the service to the city of Memphis.

That may be one thought he had in mind. Or he may have been concerned by the fact that one of the companies sponsoring the Dixon-Yates plan formerly served Memphis and several years ago the city arranged, after a referendum vote, to buy out the company's facilities in Memphis and operate a municipal system.

Either or both of those facts may have been in the mayor's mind.

Mr. CANNON. What about the mayor's statement that—

For obvious reasons, it has no responsibility for the economic development of the community.

Mr. WESSENAUER. The contract is for a fixed amount of power, geared to AEC's needs. The company has no service obligation to help assure the city that it would have all the power it needs when it needs it.

Mr. CANNON. Then the third paragraph:

Moreover, the Dixon-Yates arrangement violates every recognized principle which is basic to the development of electric utility systems so as to maximize economic and efficient operations. Surely it should not be necessary for us to state these principles for you—the TVA power system is the world's outstanding example of a completely integrated and coordinated utility system. Thus the considerable economies which have been achieved in the operations of the TVA system are due in major part to the efforts of TVA management in developing a system which is fully integrated.

Why would you say the Dixon-Yates arrangement violates "every recognized principle which is basic to the development of electric utility systems so as to maximize economic and efficient operations"?

Mr. WESSENAUER. Possibly one thing he may have had in mind is the fact that the plant would be located in the wrong place and would be of the wrong size, with respect to the needs of the TVA system.

Mr. CANNON. That is true?

Mr. WESSENAUER. That is my belief, sir.

Mr. CANNON. Then reading the fourth paragraph:

For the above reasons the city of Memphis and others in the Tennessee Valley, including the State of Tennessee, are seeking the full protection which is due them under the Public Utility Holding Company Act of 1935. As you know, one of the chief reasons for the enactment of this legislation was a recognition by the Congress that it was essential to consumers and the public interest generally that the growth of utility systems be regulated under standards which would contribute to economy and efficiency of operation. Thus one of the basic features of the Holding Company Act is the principle of "integrated and coordinated operations." Another important feature is the confinement of utility systems to a limited service area, as an additional measure to assure economy and efficiency and to further local responsibility, local management and local regulation. The Dixon-Yates arrangement violates all of these important requirements of the act.

Why, Mr. Wessenauer, does the Dixon-Yates arrangement violate all these mentioned features of the Holding Company Act?

Mr. WESSENAUER. I would really like to consider that a little, Mr. Chairman.

Mr. CANNON. The letter of the mayor says here—

One of the basic features is the principle of integrated and coordinated operations. Another important feature is the confinement of utility systems to a limited service area, as an additional measure to assure economy, efficiency, and further local responsibility, local management, and local regulation. The Dixon-Yates arrangement violates all of these important requirements of the act.

How and in what respect does it violate all these important requirements of the act?

Mr. WESSENAUER. I suppose the mayor may have been referring here to the arguments which the city and the other litigants are raising in this court case. I think they are asking whether the participation of the Southern Co., whose operations are far removed from the Dixon-Yates site, is in accordance with the Holding Company Act which requires that the operating companies in any group be confined to companies which are closely related physically. I assume that is among the points he is making here.

Mr. CANNON. Would it be logical to assume that is one of the points he is making here?

Mr. WESSENAUER. That is one of the points made in the litigation.

Mr. CANNON. In view of your knowledge of the situation you would assume it would be?

Mr. WESSENAUER. That is right.

Mr. CANNON. The letter continues:

When you communicate our views to the Bureau of the Budget I hope you will say to the Bureau that the people of this region are puzzled by the utterances of partnership which have emanated from various official sources. We are puzzled because despite these claims of interest and concern with the welfare of local communities the Bureau of the Budget, without even first exploring alternative solutions with those who would be vitally affected, has attempted in the Dixon-Yates deal to saddle our area with a source of power supply which would be a drain on and a detriment to our future development and economic well-being. What kind of a partnership is it where the Federal Government makes a vital decision affecting a city's power supply without first consulting the people who have a direct pecuniary interest? And what kind of a partnership is it where the vital decisions on the part of the Federal Government affecting a city's power supply and indeed its whole future seem to be made, not by TVA, the Federal agency with which distributors of power in this area have contracts, but by the Bureau of the Budget and the Atomic Energy Commission, neither of them with any apparent interest in the city's problems or its viewpoint.

Let me ask you, do these statements correctly describe the Budget Bureau's position as you are familiar with it? Do you think that is a fair statement of the position of the Budget Bureau?

Mr. WESSENAUER. I do not know whether or not it is the position of the Budget Bureau, Mr. Cannon. The letter raises the point that a decision affecting them seems to have been made in Washington without the city having an opportunity to have its views considered.

Mr. CANNON. When they are the parties most in interest, and when they have been very vitally affected?

Mr. WESSENAUER. Yes, sir.

Mr. CANNON. How do you account for the failure of the Budget Bureau to consult them on such an important matter?

Mr. WESSENAUER. Mr. Chairman, I do not believe I can answer that question.

Mr. CANNON. Just one more excerpt, Mr. Chairman:

Memphis of course wishes to continue as a part of the TVA system because the arrangement is sound and has produced great benefits for all concerned. We have made important public use of the benefits of economically produced TVA power, but at the same time the rate payers of Memphis, together with all other consumers in the Tennessee Valley area, have made it possible for the TVA system to be self-supporting and to earn a reasonable return on the Federal investment. On this basis, the people of Memphis have invested approximately $50 million in their own distribution system, which is fully integrated with TVA's own system. It seems clear that if Memphis and the rest of the Tennessee Valley are to continue to have the benefits and economies of an integrated power system, new generating capacity should be constructed by TVA at locations selected by TVA, and the power consumers should continue to pay rates which cover the cost of that capacity and provide an adequate return on the investment.

This can be done under the financing plan you and your colleagues on the TVA Board have recommended. We trust that your efforts to secure approval of the plan by the Bureau of the Budget will be successful. But if your efforts should not prove successful, then the city of Memphis will take such further steps as the situation may require for the safeguarding of its vital interests in this matter.

For the reasons we have indicated, including those relating to pending litigation, it is our position that under no circumstances would the city of Memphis ever become a market for Dixon-Yates power.

Now, Mr. Wessenauer, how does this last statement I have just read with respect to Memphis safeguarding its own interests relate to the status of the financing system mentioned?

What do you take them to mean when they say it may require the safeguarding of its interests, to take such steps as may be required to safeguard its vital interests in this matter, "take such further steps as the situation may require for the safeguarding of its vital interests"?

Mr. WESSENAUER. They have already, as I indicated earlier, entered into litigation with respect to the arrangement between Dixon-Yates and the AEC.

Mr. CANNON. It is evident to anyone who has read the rest of the letter, especially to anyone who has read the last paragraph, that Memphis will adopt any proper recourse, including, if necessary, building. Can you make any other interpretation?

The letter in closing says that if necessary, if their interests are not taken into account as they suggest by the Bureau of the Budget, they propose to build their own plant. Can there be any other interpretation of this statement?

Mr. WESSENAUER. I do not know, but it seems to me it leads to that, sir.

Mr. CANNON. Then they mention the financing plan. What is the status of the financing plan?

Mr. WESSENAUER. Well, the financing plan was submitted by the TVA to the Bureau of the Budget the 1st of April. Just this past week TVA has received a response from the Bureau of the Budget, which includes comments and changes with respect to it. Those changes are now being considered by the TVA. There has not yet been opportunity to complete the staff review or for the Board to give consideration to it. That is the status at the present moment.

Mr. CANNON. Mr. Chairman, I would be glad if you would include the letter in the record in its entirety.

Mr. RABAUT. This entire letter from the mayor of Memphis?

Mr. PHILLIPS. Mr. Cannon said he read the entire letter. I take it that he has not, then, is that correct?

Mr. CANNON. I will ask the witnesses before us to put a summary of their view on the report in the record at this point.

Mr. RABAUT. Without objection the letter will be included in the record at this point.

(The matter referred to is as follows:)

CITY OF MEMPHIS,
COMMISSION GOVERNMENT,
Memphis, Tenn., May 18, 1955.

Gen. HERBERT D. VOGEL,
Chairman of the Board, Tennessee Valley Authority,
Knoxville, Tenn.

DEAR GENERAL VOGEL: This is in response to your letter of April 5, 1955, in which you state that the Bureau of the Budget wishes to know the intent of the city of Memphis with respect to accepting power generated at the proposed Dixon-Yates plant in Arkansas. I am glad to have the opportunity of setting out fully Memphis' position with regard to the Dixon-Yates arrangement and the whole matter of future power supply.

As for Dixon-Yates, the position of the city of Memphis has, from the outset, been clear and unequivocable. It is inconceivable that Memphis should be dependent upon a source of power which is clearly inconsistent with the continued growth and development of our community. Anyone who is familiar with the relationship of public utility service to the welfare and health of a community knows perfectly well that no community should be made to rely upon a source of power which is produced by a system foreign to that community and which for obvious reasons has no responsibility for its economic development.

Moreover, the Dixon-Yates arrangement violates every recognized principle which is basic to the development of electric utility systems so as to maximize

economic and efficient operations. Surely, it should not be necessary for us to state these principles for you—the TVA power system is the world's outstanding example of a completely integrated and coordinated utility system. Thus the considerable economies which have been achieved in the operations of the TVA system are due in major part to the efforts of TVA management in developing a system which is fully integrated.

For the above reasons, the city of Memphis and others in the Tennessee Valley, including the State of Tennessee, are seeking the full protection which is due them under the Public Utility Holding Company Act of 1935. As you know, one of the chief reasons for the enactment of this legislation was a recognition by the Congress that it was essential to consumers and the public interest generally that the growth of utility systems be regulated under standards which would contribute to economy and efficiency of operations. Thus one of the basic features of the Holding Company Act is the principle of "integrated and coordinated operations." Another important feature is the confinement of utility systems to a limited service area, as an additional measure to assure economy and efficiency and to further local responsibility, local management, and local regulation. The Dixon-Yates arrangement violates all of these important requirements of the act.

Your letter seems to make clear that the Bureau of the Budget would place the city of Memphis in a position where, under the threat of the Dixon-Yates deal, Memphis would have no alternative but to take power from the Dixon-Yates plant or make arrangements to provide its own. We do not believe that the choice need lie between these two alternatives. Certainly the plan for future financing of TVA power facilities which you have recommended to the Bureau of the Budget provides an alternative which is sound and prudent from the standpoint of the Federal Government and at the same time is consistent with the welfare of the people of this community and other communities of the Tennessee Valley region. The Dixon-Yates plan is not, and for this reason we are taking the legal and practical steps necessary to prevent this improvident power arrangement from being foisted upon us.

We have heard a great deal concerning the desirability of a partnership relationship between the Federal Government and local agencies in developing power and other resources. We believe that the whole history of the TVA and the great advances which have been made in the Tennessee Valley are living examples of such a relationship. We believe that for almost 20 years the city of Memphis and the TVA have had such a partnership and that this relationship has not only been a good one for our region but has also benefited the country as a whole.

When you communicate our views to the Bureau of the Budget I hope you will say to the Bureau that the people of this region are puzzled by the utterances of partnership which have emenated from various official sources. We are puzzled because despite these claims of interest and concern with the welfare of local communities the Bureau of the Budget, without even first exploring alternative solutions with those who would be vitally affected, has attempted in the Dixon-Yates deal to saddle our area with a source of power supply which would be a drain on and a detriment to our future development and economic well being. What kind of a partnership is it where the Federal Government makes a vital decision affecting a city's power supply without first consulting the people who have a direct pecuniary interest? And what kind of partnership is it where the vital decisions on the part of the Federal Government affecting a city's power supply and indeed its whole future seem to be made, not by TVA, the Federal agency with which distributors of power in this area have contracts, but by the Bureau of the Budget and the Atomic Energy Commission, neither of them with any apparent interest in the city's problems or its viewpoint.

Memphis of course wishes to continue as a part of the TVA system because the arrangement is sound and has produced great benefits for all concerned. We have made important public use of the benefits of economically produced TVA power, but at the same time the rate payers of Memphis, together with all other consumers in the Tennessee Valley area, have made it possible for the TVA system to be self-supporting and to earn a reasonable return on the Federal investment. On this basis, the people of Memphis have invested approximately $50 million in their own distribution system, which is fully integrated with TVA's own system. It seems clear that if Memphis and the rest of the Tennessee Valley are to continue to have the benefits and economies of an integrated power system, new generating capacity should be constructed by TVA at locations selected by TVA, and the power consumers should continue to pay rates which cover the cost of that capacity and provide an adequate return on the investment.

This can be done under the financing plan you and your colleagues on the TVA Board have recommended. We trust that your efforts to secure approval

of the plan by the Bureau of the Budget will be successful. But if your efforts should not prove successful, then the city of Memphis will take such further steps as the situation may require for the safeguarding of its vital interests in this matter.

For the reasons we have indicated, including those relating to pending litigation, it is our position that under no circumstances would the city of Memphis ever become a market for Dixon-Yates power.

Sincerely yours,

FRANK T. TOBEY, *Mayor.*

TVA PROPOSAL FOR SELF-FINANCING OF POWER PROJECTS

Mr. WAGNER. Mr. Chairman, what is it that Mr. Cannon wants included in the record?

Mr. RABAUT. Mr. Cannon wants a summary of TVA's review of the Bureau of the Budget's report on TVA's financial proposal.

Mr. CANNON. There is no hurry about that, Mr. Chairman. They can take the rest of the week in which to prepare it if they desire to do so.

Mr. RABAUT. You want it in the record at this point?

Mr. CANNON. As indicated.

(The following information was supplied for the record:)

TENNESSEE VALLEY AUTHORITY,
May 27, 1955.

The following letter was sent today by Gen. Herbert D. Vogel, Chairman of the Tennessee Valley Authority to the Honorable Dennis Chavez, chairman, Committee on Public Works, United States Senate, and the Honorable Charles A Buckley, chairman, Committee on Public Works, House of Representatives:

"On April 1 the Tennessee Valley Authority sent to the Bureau of the Budget a proposed bill which would amend the TVA Act of 1933 to authorize TVA to sell bonds and to use other methods to finance future additions to its power system. A revised draft of the bill has now been received from the Director of the Budget along with his statement contained in the enclosed letter of May 17 that enactment of the revised draft would be in accord with the program of the President. In the interest of expediting this important matter, the draft bill as revised by the Bureau of the Budget is transmitted herewith for consideration by your committee.

"A further attachment, prepared by the Bureau of the Budget, indicates the Bureau's changes from the bill proposed by TVA, along with the Bureau's explanatory notes. For the convenience of your committee there is also enclosed a copy of a statement which TVA forwarded to the Bureau of the Budget with its original draft of the proposed legislation. The statement indicates the elements which TVA, from its viewpoint, considers essential to provide the most desirable financing arrangements.

"It is the judgment of the majority of the Board of Directors that some of the changes proposed by the Bureau of the Budget would create serious problems for TVA. Of particular concern are those which would make more rigid the financial obligations on the TVA power system. Fixed cash payments to be paid to the Treasury from power earnings would be larger under the revised bill than were contemplated in the plan submitted by TVA, and by combining interest with amortization it would appear that the imposed obligations would go beyond those indicated by normal business standards.

"Other proposed changes by the Bureau of the Budget would impose administrative restrictions which would combine to reduce TVA's ability to manage its power system with some of the flexibility of a private corporation, although it would be forced to rely on the same methods of financing that are employed by other power systems. These restrictions would include giving the Secretary of the Treasury the final voice as to whether TVA could issue bonds at a given time and for given amounts and terms, although it is not proposed that bonds issued by TVA should be guaranteed by the Treasury.

"The Board members will be glad to present more detailed comments and views to your committee at your convenience. In view of the fact that no funds for new construction are contained in the 1956 budget and that self-financing is

designed to provide an alternative to appropriations, action is deemed necessary in this session of Congress. The Chairman feels that the bill as revised will present no serious obstacles or restrictions to the operations of TVA and that its passage would be in the regional and national interest."

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington 25, D. C., May 17, 1955.

Hon. HERBERT D. VOGEL,
Chairman, Board of Directors,
Tennessee Valley Authority, Knoxville, Tenn.

MY DEAR GENERAL VOGEL: This will acknowledge your letter dated April 1, 1955, transmitting copies of a draft bill to amend the Tennessee Valley Authority Act of 1933, as amended, and for other purposes.

We thank you for the work you have done in having this draft bill prepared as requested. It appears to be a long step toward accomplishment of the objectives stated in the President's 1956 budget message with respect to financing TVA by means other than appropriations. The bill has been referred by the Bureau of the Budget to the Treasury Department, the Federal Power Commission, and the General Accounting Office. The comments of these agencies and the discussion submitted by the Tennessee Valley Authority along with the bill have been carefully reviewed by the Bureau of the Budget. Our study of this bill in the light of the comments of the other agencies has led us to the conclusion that certain modifications in the draft bill are necessary if it is to conform with the program of the President. You will find enclosed a copy of the bill modified along these lines with a brief explanation of each change in the bill.

You will notice that these modifications in the bill are largely in the direction of preserving the form and substance of Presidential and congressional control over the policies of the Tennessee Valley Authority which are now provided under the Government Corporation Control Act. For example, it is considered essential that the financial operations of the Tennessee Valley Authority under the bill be reported annually in the budget subject to the approval of the President and the Congress; that an upper limit be set on the amount of revenue bonds to be outstanding at any one time; and that the form and timing of bond issues be subject to the approval of the Secretary of the Treasury. A number of related modifications are made to accomplish these general purposes.

Other changes in the bill include the following: (1) A provision authorizing the Secretary of the Treasury to purchase TVA bonds is deleted; (2) the language of the bill is made specific with respect to the requirements for orderly return of appropriation investment to the Treasury; and (3) the method for the computation of the amount of interest payable to the Treasury on appropriation investment is changed to conform to Treasury policy.

Accordingly, you are advised that there is no objection to transmittal of the draft bill as revised in the enclosure, to the Congress and that its enactment would be in accord with the program of the President. It is expected that consideration will be given to submitting to the Congress an amendment to the 1956 budget following action on the bill in one House.

Sincerely yours,

ROWLAND HUGHES, *Director.*

EXPLANATORY STATEMENT OF PROPOSED CHANGES IN DRAFT BILL SUBMITTED BY THE TENNESSEE VALLEY AUTHORITY

The numbered paragraphs below are keyed to the attached draft bill. The sections proposed for deletion in the bill are bracketed and the new language is italicized.

A BILL To amend the Tennessee Valley Authority Act of 1933, as amended, and for other purposes—

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the [last three] *fourth and fifth* [1] paragraphs under the subtitle "Independent Agencies and Corporations" in Title II of the Government Corporations Appropriation Act, 1948 (61 Stat. 576–577), are hereby repealed; and the Tennessee Valley Authority Act of 1933, as amended, is hereby amended by inserting immediately after Section 15c thereof (16 U. S. C. sec. 831n–3) the following new section:

[1] The last paragraph of title II is retained, since its deletion would remove the present requirement that the construction of new power producing facilities from power revenues be approved by act of Congress. We believe that this requirement should be retained.

"SECTION 15d. (a) The Corporation is authorized [, without regard to the provisions of Section 303 (a) of the Act of December 6, 1945 (59 Stat. 601–602, 31 U. S. C. sec. 868 (a)),] [2] to issue and sell bonds, notes, and other evidences of indebtedness (hereinafter collectively referred to as "bonds") [to assist in financing its power program] [3] *in an aggregate amount not to exceed $750,000,000 outstanding at any one time,*[4] and to refund such bonds. The Corporation may, *in performing functions authorized by this Act,*[5] use the proceeds of such bonds for the construction, acquisition, enlargement, improvement or replacement of any plant or other facility used to to be used for the generation or transmission of electric power (including the portion of any multiple-purpose structure used or to be used for power generation) *and for refinancing any such plant or other facility whether originally financed with the proceeds of such bonds or otherwise*; as may be required in connection with the lease, lease-purchase or any contract for the power output of any such plant or other facility; and for [incidental] *other* purposes *incidental thereto. No such bonds shall be issued or sold, nor shall the proceeds thereof be used, except as necessary for such of the foregoing purposes as may be approved by the Congress in connection with its consideration of the Corporation's budget programs transmitted by the President pursuant to the provisions of the Government Corporation Control Act, as amended (31 U. S. C. 841–871).*[6] The principal of and interest on said bonds shall be payable solely from the Corporation's net power proceeds as hereinafter defined. Net power proceeds are defined for purposes of this section as the remainder of the Corporation's gross power revenues after deducting the costs of operating, maintaining, and administering its power properties (including costs applicable to that portion of its multiple-purpose properties allocated to power) and payments to States and counties in lieu of taxes but before deducting depreciation accruals or other charges representing the amortization of capital expenditures, plus the net proceeds of the sale or other disposition of any power facility or interest therein, and shall include reserve or other funds created from such sources. Notwithstanding the provisions of Section 26 of this Act or any other provision of law, the Corporation may pledge and use its net power proceeds for payment of the principal of and interest on said bonds, for purchase or redemption thereof, and for other purposes incidental thereto, including creation of reserve funds and other funds which may be similarly pledged and used, to such extent and in such manner as it may deem necessary or desirable. The Corporation is authorized to enter into binding covenants with the holders of said bonds—and with the trustee, if any—under any indenture, resolution or other agreement entered into in connection with the issuance thereof (any such agreement being hereinafter referred to as a "bond contract") with respect to the establishment of reserve funds and other funds, provisions for insurance, charges for supply of power, application and use of net power proceeds, restrictions upon the subsequent issuance of bonds or the execution of leases or lease-purchase agreements relating to power properties, and such other matters, not inconsistent with this Act, as the Corporation may deem necessary or desirable to enhance the marketability of said bonds.

"(b) Bonds issued by the Corporation hereunder shall not be obligations of, nor shall payment of the principal thereof or interest thereon be guaranteed by, the United States. [Proceeds realized by the Corporation from issuance of such bonds and from power operations and the expenditure of such proceeds shall not be subject to apportionment under the provisions of R. S. 3679, as amended (31 U. S. C. sec. 665), and such proceeds shall not be included in computations of receipts, expenditures, surpluses or deficits in the Budget prepared annually pursuant to Section 201 of the Act of June 10, 1921, as amended (31 U. S. C. sec. 11), except to the extent of the amounts budgeted by the Corporation for payments to the Treasury as interest on bonds of the Corporation held by the Treasury, for payments pur-

[2] The effect of this deletion is to retain the authority of the Secretary of the Treasury in connection with the issuance of revenue bonds by TVA as provided in the Government Corporation Control Act. See note 21.

[3] Language referring to the Corporation's "power program" is deleted as being unnecessary. The change referred to in note 5 would make the bond proceeds available for any functions authorized by the act.

[4] In the interest of sound fiscal policy, we believe that there should be an upper limit on the amount of bonds outstanding at any one time. This will provide an opportunity for Presidential and congressional review at the time that a request is made to raise the limit.

[5] The added language restricts the use of loan proceeds to functions authorized by the act to which section 15d is an amendment, thereby giving assurance that the authorized functions of the Corporation are not broadened by the amendment.

[6] This added language makes clear that the budgetary review and congressional approval procedure provided for by the Government Corporation Control Act shall apply to the use of the proceeds of revenue bonds.

suant to subsection (f) hereof on account of the appropriation investment as therein defined, and for reduction of said investment.][7]

"(c) Bonds issued by the Corporation under this section shall be negotiable instruments unless otherwise specified therein, shall be in such forms and denominations, shall mature at such time or times not more than fifty years from their respective dates, shall be sold at such prices, shall bear such rates of interest, may be redeemable before maturity at the option of the Corporation in such manner and at such times and redemption premiums, may be entitled to such relative priorities of claim on the Corporation's net power proceeds with respect to principal and interest payments, and shall be subject to such other terms and conditions, as the Corporation may prescribe. The Corporation may [sell such bonds by negotiation or on the basis of competitive bids, subject to the right, if reserved, to reject all bids; may][8] designate trustees, registrars and paying agents in connection with said bonds and the issuance thereof; may arrange for audits of its accounts and for reports concerning its financial condition and operations by commercial accounting firms (which audits and reports shall be in addition to those required by Section 105 and 106 of the Act of December 6, 1945, (59 Stat. 599, 31 U. S. C. secs. 850–851); may [notwithstanding the provisions of Sections 302 and 303 of the Act of December 6, 1945 (59 Stat. 601–602, 31 U. S. C. secs. 867–868), or any other law, but subject to any covenants contained in any bond contract,][9] invest the proceeds of any bonds and other funds under its control which derive from or pertain to its power program in any securities approved for investment of national bank funds [and deposit said proceeds and other funds, subject to withdrawal by check or otherwise, in any Federal Reserve Bank or bank having membership in the Federal Reserve system][10]; and may perform such other acts not prohibited by law as it deems necessary or desirable to accomplish the purposes of this section.

[["(d) By agreement between the Corporation and the Secretary of the Treasury, the Corporation may sell bonds to the Secretary of the Treasury on such terms as may be mutually agreed including subordination as to principal and interest to the liens of other bonds sold by the Corporation under this section. The Secretary of the Treasury may also purchase bonds of the Corporation in the open market. For the purpose of purchasing said bonds either directly from the Corporation or in the open market, the Secretary of the Treasury is authorized to use as a public debt transaction the proceeds from the sale of any securities issued under the Second Liberty Bond Act, as amended, and the purposes for which securities may be issued under said Act, as amended, are extended to include purchases of the Corporation's obligations, but in computing the outstanding public debt the amount of any bonds issued by the Corporation and held by the Secretary of the Treasury as provided herein shall be deducted from the aggregate amount of obligations outstanding under section 21 of the Second Liberty Bond Act, as amended (31 U. S. C. sec. 757 (b)), or under any other statute limiting the public debt.]

"(d) Bonds issued by the Corporation hereunder shall be lawful investments and may be accepted as security for all fiduciary, trust, and public funds, the investment or deposit of which shall be under the authority or control of any officer or agency of the United States. The Secretary of the Treasury or any other officer or agency having authority over or control of any such fiduciary, trust or public funds, may at any time sell any of the bonds of the Corporation acquired by them under this section. Bonds issued by the Corporation hereunder shall be exempt both as to principal and interest from all taxation now or hereafter imposed by any State or local taxing authority except estate, inheritance and gift taxes.

"(e) From net power proceeds in excess of those required to meet the Corporation's obligations under the provisions of any bond or bond contract, the Corporation shall, beginning with fiscal year 1956, make [semiannual] payments into the [miscellaneous funds of the] Treasury *as miscellaneous receipts*

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[7] This deletion retains the status quo with respect to treatment of proceeds realized from bond issues and power operations and the expenditures of such proceeds with respect to apportionment and definition of budget terms in the TVA budget. We believe that TVA should be subject to the same provisions of law as are other Government corporations in regard to these matters. The Government's budget totals should continue to include the total programs of the Government agencies.

[8] Deletes specific authority to negotiate sales of bonds on the assumption that this point should be determined by the Secretary of the Treasury on a uniform basis under the Government Corporation Control Act.

[9] Deletions restore supervision over investment of TVA funds and selection of depositories to the Secretary of the Treasury in accordance with the provisions of secs. 302 and 303 of the Government Corporation Control Act. (See note 21.) The Treasury has authority to authorize TVA to use private depositories.

[10] Deletion of subsec. (d) removes authority for the Secretary of the Treasury to purchase TVA revenue bonds. This section is in conflict with the underlying objective of eliminating expenditures by the Treasury to finance further expansion of power generating facilities.

on or before [11] December 31 and June 30 of each fiscal year as a return on the appropriation investment in the Corporation's power facilities. The said appropriation investment shall consist, in any fiscal year, of that part of the Corporation's total investment assigned to power as of the beginning of the fiscal year (including both completed plant and construction in progress) which has been provided from appropriations or by transfers of property from other Government agencies without reimbursement by the Corporation, less repayments of such appropriation investment made under Title II of the Government Corporations Appropriation Act, 1948, this Act, or other applicable legislation. The payment in each fiscal year shall be equal to the computed average interest rate payable by the Treasury upon its [total] *outstanding* marketable public obligations as of the beginning of said fiscal year *which are neither due nor callable for redemption for fifteen years from date of issue* [12] applied to said appropriation investment. Payments due hereunder may be deferred for not more than two years when, in the judgment of the Board of Directors of the Corporation, such payments cannot feasibly be made because of inadequacy of funds occasioned by drought, poor business conditions, emergency replacements, or other factors beyond the control of the Corporation.

"(f) *From net power proceeds in excess of those required to meet (1) the Corporation's obligations under the provisions of any bond or bond contract and (2) the return on the appropriation investment required pursuant to subsection (e) hereof, the Corporation shall, on or before December 31 of each year, pay into the Treasury as miscellaneous receipts in reduction of the aforesaid appropriation investment an amount equal to the estimated annual depreciation charge thereon for the fiscal year immediately preceding, or such larger amount as may be determined by the Board of Directors of the Corporation in the light of the Corporation's financial condition, until such time as said appropriation investment shall be reduced to $250,000,000.*[13]

"(g) The Corporation shall charge rates for power which will produce gross revenues sufficient to provide funds for operation, maintenance and administration of its power system; payments to States and counties in lieu of taxes; debt service on outstanding bonds, including provision and maintenance of reserve funds and other funds established in connection therewith; payments to the Treasury as a return on, *and in reduction of,*[14] the appropriation investment pursuant to [subsection] *subsection* (e) *and* (*f*) hereof; and such additional margin as the Board may consider desirable for investment in power system assets, retirement of outstanding bonds in advance of maturity, reduction of appropriation investment, and other purposes [connected with the Corporation's power business] *incidental thereto,*[15] having due regard for the primary objectives of the Act [, including the objective that power shall be sold at rates as low as are feasible].[16] In order to protect the investment of holders of the Corporation's securities and the appropriation investment as defined in subsection (e) hereof, the Corporation, during each successive five-year period beginning with the period from July 1, 1955, through June 30, 1960, shall apply *the* net power proceed *remaining after making the payments required under subsections (e) and (f) hereof* [17] either in reduction (directly or through payments into reserve or sinking funds) of its capital obligations, including bonds and the *remaining* appropriation investment or to reinvestment in power assets, to the combined extent of at least the aggregate of the *remaining* depreciation accruals and other charges representing the amortization of capital expenditures applicable to its power properties plus the net proceeds realized from any disposition of power facilities in said period: *Provided, That the appropriation investment shall not be reduced below $250,000,000 except pursuant to specific authority of law hereafter enacted.*[18]

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[11] These are perfecting amendments.

[12] This added language would bring the method of computing interest charges on the appropriation investment into conformity with Treasury policy in this matter.

[13] New language provides for orderly return to the Treasury of an amount equal to the depreciation on investment in power facilities financed from appropriations. Payment would be required until the appropriation investment is reduced to $250 million. Undistributed earnings would be retained by the Corporation.

[14] Provides that rates for power shall reflect amounts required to reduce appropriation investment under subsec. (f) as well as amounts of interest payments required under subsec. (e).

[15] Omits reference to the "Corporation's power business" as unnecessary, and substitutes language permitting additional margin for "other purposes incidental" to those specifically mentioned.

[16] Deleted as unnecessary, and in order to avoid confusion from mentioning one objective of the act while omitting mention of others.

[17] The inserted language is intended to provide for use of net power proceeds for retirement of capital obligations and reinvestment in power assets only after payment of the required return on, and the reduction of, the appropriation investment.

[18] This proviso is intended to insure that the authority to apply net power proceeds against the remaining appropriation investment will not conflict with the provision setting $250 million as the minimum Government investment to be kept in TVA. See note 13.

"(h) Power generating and related facilities operated by the Corporation under lease and lease-purchase agreements shall constitute power property held by the Corporation within the meaning of section 13 of this Act, but that portion of the payment due for any fiscal year under said section 13 to a State where such facilities are located which is determined or estimated by the Board to result from holding such facilities or selling electric energy generated thereby shall be reduced by the amount of any taxes or tax equivalents applicable to such fiscal year paid by the owners or others on account of said facilities to said State and to local taxing jurisdictions therein. In connection with the construction of a generating plant or other facilities under an agreement providing for lease or purchase of said facilities of any interest therein by or on behalf of the Corporation, or for the purchase of the output thereof, the Corporation may convey in the name of the United States by deed, lease or otherwise, any real property in its possession or control, [may perform engineering and construction work and other services,] [19] and may enter into any necessary contractual arrangements.

"(i) It is hereby declared to be the intent of this section to provide the Corporation with adequate authority and administrative flexibility to obtain funds for such additional power facilities as may be needed in carrying out the purposes of Congress specified in this Act, [including assurance of an adequate supply of electric power for publicly and privately owned defense facilities,] [20] by the issuance of its bonds and as otherwise provided herein, and this section shall be construed to effectuate such intent.

"(j) *Except for the audits of its accounts by commercial accounting firms as provided for in subsection (c) hereof, the authority granted to the Corporation by this section shall be subject in all respects to the provisions of sections 301, 302, and 303 of the Government Corporation Control Act, as amended (31 U. S. C. 866–868).*" [21]

SEC. 2. The Tennessee Valley Authority Act of 1933, as amended, is hereby amended by inserting after the last paragraph of section 3 thereof (16 U. S. C. 831b) a new paragraph as follows:

"*The Corporation shall contribute to the civil-service retirement and disability fund, on the basis of annual billings as determined by the Civil Service Commission, for the Government's share of the cost of the civil-service retirement system applicable to the Corporation's employees and their beneficiaries. The Corporation shall also contribute to the employee's compensation fund, on the basis of annual billings as determined by the Secretary of Labor, for the benefit payments made from such fund on account of the Corporation's employees. The annual billings shall also include a statement of the fair portion of the cost of the administration of the respective funds, which shall be paid by the Corporation into the Treasury as miscellaneous receipts.*" [22]

SECTION [2] *3.* Paragraph seventh of section 5136 of the Revised Statutes (12 U. S. C. sec. 24), as amended, is *further* amended by inserting after ["obligations of the Federal National Mortgage Association" the words ", or bonds, notes and other obligations issued by the Tennessee Valley Authority".] *the words "Farm Credit Act of 1933," the words "or the Tennessee Valley Authority," and by substituting for the word "either" in the proviso following said sentence the word "any", and by substituting for the word "banks" in said proviso the word "organizations."* [23]

[Advance release of Tennessee Valley Authority, April 5, 1955]

The Board of Directors of the Tennessee Valley Authority today announced that it has transmitted to the Bureau of the Budget a report recommending legislation which would provide new sources of capital for the TVA power system to finance new generating capacity as it is required by the growing demands of the region.

The TVA Board's unanimous recommendations, in brief, are—

1. TVA would be empowered to issue its own revenue bonds to be secured by power revenues and to be sold to private investors or, by mutual agreement, to

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[19] Deletion conforms to the policy of the administration with respect to Government competition with private business.

[20] This language is unnecessary in view of the provision permitting the use of bond proceeds for any functions authorized by the act. See note 5.

[21] New subsec. (j) makes explicit that the authority granted to the Corporation by sec. 15d is subject to the provisions of secs. 301, 302, and 303 of the Government Corporation Control Act, in the same manner as other wholly owned Government Corporations. See notes 2 and 9.

[22] New sec. 2 is designed to require TVA to pay its share of the cost of the civil-service retirement and disability compensation systems; also, its share of the cost of the employees compensation fund. This is in line with the recommendations made in the annual audit reports of the General Accounting Office and accords with the current policy with respect to self-supporting Government enterprises.

[23] The effect of the change is to permit national banks to deal in or underwrite TVA obligations, but without removing restrictions applicable to their purchases for their own accounts or limitations on the total amounts which any such bank may hold as a result of dealing in, underwriting, or purchasing such securities for its own account.

the United States Treasury. TVA bonds would not be guaranteed by the Treasury and would not add to the national debt.

2. It is also contemplated that additional power capacity might be made available to TVA under power purchase, lease, or lease-purchase agreements with agencies of the region which could finance new construction.

3. The new financing measures would be supplementary to present sources of capital; namely the appropriations provided by Congress and the revenues available from TVA power operations.

4. TVA would be required to pay into the Treasury a return on the net appropriations made for power purposes at the average cost of money on the Treasury's marketable obligations. In lieu of the present requirement that TVA repay within 40 years appropriated funds invested in power, TVA would be required either to reinvest from revenues at least the equivalent of depreciation accruals or reduce its capital obligations correspondingly, thereby maintaining the security of the Government's investment.

5. TVA would charge rates adequate to cover its operating expenses, statutory payments to States and counties in lieu of taxes, interest, and principal on bonds, payment of the return to the Treasury, and such a margin as would be desirable in TVA's judgment, consistent with maintaining the lowest practicable rates. The Board estimated that present earnings are adequate for these purposes.

6. The TVA Board would continue to report its power operations and budget programs annually to the President and the Congress.

7. The receipts and expenditures of the TVA power system would not be considered in determining the amount of any national budgetary deficit or surplus, except as Congress may provide appropriations in the future and except for payments made by TVA to the Treasury for interest or return, or repayment of the Federal investment in the TVA power system.

The report is attached.

[Advance release of Tennessee Valley Authority, April 5, 1955]

Sources of Capital for the TVA Power System

At the direction of the TVA Board the staff has explored the problem of the future financing of the TVA power system. On the basis of this study the staff now recommends additional methods of providing the capital required as TVA continues to carry out the statutory objectives of its power program.

STATEMENT OF THE PROBLEM

The power requirements of the region served by the TVA system have been growing at the rate of about 12 percent per year, exclusive of power furnished for the atomic-energy program of the Federal Government. Rapid growth will continue as the region develops. Approximately $150 million a year in the next few years and probably larger amounts in the future will be required to provide new power facilities. The capital requirements of almost all power systems in the United States are so large that new investment must be obtained outside the earnings of the business. TVA is no exception. While some of the funds required for the growth of the TVA power system can be provided from earnings, it appears that more than $75 million of additional capital will be required annually to keep abreast of the demands for power.

Direct sales by TVA to national defense agencies of the Government will require half of the total annual output of the TVA power system by 1957. Many private plants important to the national defense are also dependent upon TVA as a source of power supply. Failure of the power system to keep abreast of power demands would not only be expensive and a deterrent to the economic growth of the area; it would also jeopardize the continuity and dependability of service to all the loads on the system, defense and nondefense alike. This consideration underlines the importance of assuring that in the Tennessee Valley as elsewhere power facilities can be financed and built as they are required to meet mounting loads.

The TVA power system is owned by the Federal Government and is operated for objectives and under conditions laid down by Congress. Normally the Federal Government as owner might be expected to provide the additional capital from the cheapest source of money, but in periods of national deficit financing there is reluctance on the part of the executive branch and the Congress to increase budget deficits by using appropriations to finance new powerplant construction. It becomes necessary, therefore, to broaden the sources of capital available for the

TVA system's growth. A program to accomplish that purpose is outlined in the recommendations below.

SUMMARY

It is recommended that the TVA Act be amended to add authorization for TVA to issue its own bonds, secured solely by its revenues which could be sold to the public or, by mutual agreement, to the Treasury. The recommended amendments would also facilitate the use by TVA of the credit of agencies in the region under arrangements whereby these agencies would finance the construction of facilities which would be integrated with the TVA power system. In the case of plants financed in this way, TVA could contract for the power output, or could operate the facilities under a lease arrangement, with or without provision for ultimate transfer of title to TVA.

The proposed legislation would permit future additions to TVA's power capacity to be financed by whichever method the Government as a prudent owner of the system might find desirable in the light of all existing circumstances. With appropriations as the sole source of capital, other than earnings, the tendency is for investment in TVA power facilities to be determined largely in relation to the size of the national budget and the national debt. With other methods of financing available, primary attention can be given to the factors which should be determinative, the regional needs for expansion of power supply and the soundness of the investment in new power sources.

Under such a plan TVA, although it is a wholly owned agency of the Federal Government, would be using some capital obtained at higher cost than if all the financing were by means of appropriated funds raised by direct Treasury borrowing, but there would be savings in other costs that might offset the higher cost of money. Timing major equipment purchases and construction to fit the schedule of the appropriations process and yet meet power demands sometimes means buying in a disadvantageous market and paying overtime costs; and delays in the availability of appropriations may result in heavy costs for interim power purchased or produced by TVA from marginal sources.

The TVA power system has been earning an average return on the net power investment of 4 percent after allowing for depreciation. Including the depreciation allowance there have been net cash revenues available for expenditure averaging over 6 percent of the power investment. It is expected that this level of earnings can be continued. Under the proposed arrangements the cost to TVA for interest, and for a return to the Treasury (at a rate equal to the Treasury's cost of money) on the appropriations invested in power facilities, would average between 2 and 3 percent of the total investment. Accordingly, the accumulated net earnings of the TVA power program should continue to grow and TVA securities should command a ready market.

In reaching these conclusions the studies TVA has made in this field in previous years have been reviewed. Information has been obtained by correspondence and personal interviews from a considerable number of organizations from whose experience TVA might benefit. Projections have been made of revenues, net earnings, and debt service requirements under various assumptions as to interest cost and rate of debt retirement. By all these methods we have sought to test and demonstrate the validity of the conclusions.

RECOMMENDATIONS

The following sections outline the recommendations as to the methods of financing TVA's future requirements for power facilities, and the necessary legislation:

1. Use of appropriations and revenues

The new financing measures which are proposed would be supplementary to and not in substitution for present sources of capital, namely the appropriations provided by Congress and the revenues available from power operations.

Appropriations and power revenues should not be the sole means of financing future construction, but it is important that the availability of these sources of capital be preserved. The Federal Government can borrow money on its own securities at a lower rate of interest than TVA would pay on its revenue bonds, and while the difference in the cost of money may be relatively small at some times it may be fairly large at others. In addition to differences in the cost of money, such factors as the nature of the facility or the occasion for its construction may make it desirable to finance a particular facility from appropriations. The authorization for appropriations does not, of course, commit Congress to make appropriations but permits their use in suitable cases.

2. The sale of bonds by TVA

TVA would be authorized to issue bonds (or notes or other obligations) to assist in financing the power system. These bonds would not be guaranteed by the Treasury but would be secured by power revenues alone; and interest on the bonds would not be exempt from Federal taxes. Such bonds would be sold to private investors either by competitive bidding or by negotiation; by mutual agreement they might also be sold to the Treasury when that procedure would be preferable.

From discussions with a number of experienced persons, the staff has concluded that under the proposed arrangements the TVA revenue bonds would have a high rating and would carry an interest rate about the same as the highest-rated bonds of the private utilities. Such utility bonds have an interest cost at present only one-eighth to one-fourth percent higher than Treasury bonds with a corresponding length of term. In recent months a probable interest rate would have been 3⅛ to 3⅜ percent, and an average for the past 15 years would have been less than 3 percent.

It is anticipated that the lowest cost of money on TVA bonds would usually be obtained through competitive bidding, but bidding on bond issues of the size required for TVA's purposes would almost certainly be confined to a few large syndicates. In view of the limited nature of the competition it is important that TVA be able to sell its bonds on a negotiated basis when that course is advantageous. Provision is also made for sale of bonds directly to the Treasury by mutual agreement. Among other advantages, this provision would take care of the possibility that the Treasury might prefer on occasion, because of considerations of overall fiscal policy, to acquire TVA's bonds rather than have them sold to the public.

A somewhat lower interest rate—perhaps one-fourth percent lower—might be obtained if TVA bonds carried the Treasury's guaranty in addition to the pledge of TVA's revenues. However, the controlling considerations in issuing bonds guaranteed by the Treasury would tend to be those related to the size and management of the Federal budget and the national debt. Financing the TVA power system should not depend on such considerations, but rather on the need for power capacity in the area and the feasibility of financing it on the security of the system's earnings.

Similarly, if interest on TVA bonds were made exempt from Federal income taxes a saving of as much as one-half percent in interest on the bonds might be achieved. However, such a reduction in interest cost would not represent a real saving to the Federal Government, because the savings to TVA in interest payments would be offset by the loss to the Treasury of the income taxes otherwise collectible on the amounts paid as interest.

3. Use of credit of agencies of the Tennessee Valley region

TVA might also enter into power purchase, lease, or lease-purchase arrangements covering plants or other facilities financed by agencies of the region. Such facilities might be constructed by them or by TVA for their account. Facilities covered by such lease or lease-purchase arrangements would be regarded as power property held by TVA for purposes of computing payments in lieu of taxes under section 13 of the TVA Act; but the amount of taxes or tax-equivalents paid by the owner of the plant within the State where it was located would be deducted from any increase in the amount otherwise payable by TVA to such State on account of the lease of such plant and the sale of its output.

There might be occasions when it would be practicable for new power facilities to be provided for the TVA system by the use of lease-purchase agreements. A facility constructed under such an arrangement would be operated by TVA under a long-term lease; the rental payments would cover the fixed charges and TVA would acquire title when the cost was fully amortized. It is possible that the credit of some of the TVA power distributors or of some of the States of the region, or perhaps of some other agency of the region, could be used to finance such arrangements, and the proposed legislation takes this possibility into account. A lease without provision for ultimate transfer of title, or a long-term contract whereby the financing agency would operate the plant and sell its output to TVA, might also be a feasible basis for the construction of facilities which could be integrated with the TVA system.

It does not seem likely that arrangements for State or local financing would provide a major share of the future capital needed. A considerable period would probably be necessary before any number of such agencies would be in position to handle the necessary financing for the construction of such facilities; in fact, the necessary enabling legislation does not now exist in most of the States of the Tennessee Valley. Moreover, the staff believes that under most circumstances it

would be preferable for TVA to borrow money directly rather than to rely on financing by a variety of local agencies. Such outside financing should therefore be regarded not as a method for general application, but as a financial vehicle for possible use in special cases.

An agency which might otherwise be able to finance a plant might not be qualified to design and build it. TVA should be authorized to provide engineering and construction services in such cases.

Section 13 of the TVA Act provides for payments in lieu of taxes to the States and counties in which TVA operates amounting to 5 percent of power revenues from customers other than agencies of the United States. The amounts paid to the several States are distributed among them under the statutory formula partly on the basis of the location of the power property held by TVA, and partly on the basis of TVA's power sales in the respective States. The proposed legislation would treat a leased plant as power property held by TVA for purposes of distribution among the States of the payments made under section 13. Since the owner of a leased plant might pay taxes (or tax equivalents) under State law, such a plant might thus carry a duplicate tax burden in the absence of any provision to the contrary in the proposed legislation. The proposed arrangements would meet this problem by offsetting the owner's tax payments against the increase in the payments which TVA would otherwise make to the State.

4. The existing Federal investment

TVA would be required to pay into the Treasury a return on the net appropriations made for power purposes, including the value of power properties transferred from other Federal agencies. Such payment would be measured by the Treasury's average cost of money on marketable obligations. In addition, the security of the Government's investment in TVA would be maintained by a requirement that TVA either reinvest from revenues at least the equivalent of depreciation accruals, or that it reduce its capital obligations correspondingly. These requirements would be in lieu of the present statutory requirement that TVA repay to the Treasury the appropriated funds invested in power facilities within 40 years after such facilities go into operation.

The Federal Government has already invested large amounts of money in the TVA power system. The plan herein proposed recognizes and protects the Government's existing investment. It would require TVA to pay a return on the Federal investment derived from appropriations, at a rate equal to the Government's cost of money. The appropriations invested might be reduced from time to time by payments to the Treasury from surplus revenues; a portion of revenues at least equal to the depreciation would either be used for such payments or bond retirements or reinvested in additional power properties, thus protecting the integrity of the remaining investment On the basis of our estimates, TVA's net earnings would be well above those required to maintain the security of the Government's investment. These accumulating earnings would enhance the Government's investment whether appropriations were repaid or the additional earnings were plowed back into the growing system.

5. TVA power rates and the disposition of TVA revenues

TVA would charge rates adequate to cover its operating expenses, statutory payments to States and counties in lieu of taxes, debt service on bonds, payment of a return to the Treasury, and such a margin as would be desirable in TVA's judgment, consistent with maintaining the lowest practicable rates. It would be authorized to enter into pledges with lenders that debt service on TVA bonds and any necessary related reserves would have first claim on all power revenues after operating and maintenance expenses and the payments in lieu of taxes. Revenues would next be used for payment of a return to the Treasury on appropriated funds. Remaining revenues would either be invested by TVA in power system assets or would be used for debt retirement or reduction of the appropriation investment.

TVA would continue to operate its power system on a self-liquidating basis. Its earnings would be more than adequate for debt service on its bonds and to pay a return to the Treasury on the investment derived from appropriations. The pledge of net revenues from the entire system as security for the TVA bonds would increase the attractiveness of such bonds, but such a pledge would constitute no burden on the Government; on the contrary, by reducing the cost of borrowed money, it would increase the balance of TVA earnings which would remain the property of the Government.

6. Executive and congressional reviews of TVA budget programs

The TVA Board would have authority to determine the extent, timing, and details of the power financing arrangements, but TVA would report its power operations and budget program annually to the President and the Congress. The General Accounting Office would continue to audit TVA's power accounts as a part of its regular audit of all TVA activities but TVA would be authorized in addition to obtain independent audits.

The amounts of bonds to be issued would be determined by the need for new facilities. Since the bonds would be revenue bonds, with no Treasury guaranty, their salability would depend on the soundness of the investment. TVA's annual reports, the GAO's audit reports of TVA operations, the budget programs submitted in connection with TVA's annual requests for money for its nonpower activities which are financed from appropriations, and the hearings held in connection with such requests, would result in full reporting to the President and the Congress concerning TVA's power construction programs and operating results.

Section 301 of the Government Corporation Control Act (31 U. S. C. sec. 866) provides for annual business-type audits of Government corporations by the General Accounting Office, and permits Government corporations to obtain private audits only if expressly authorized to do so. Bonds are sold on the basis of representations by the borrower as to its current financial condition, supported by an outside audit. In order to issue bonds promptly when funds are needed and to take advantage of changing conditions in the bond market it will be necessary to utilize the services of one of the well-known private auditing firms. Express authority for this purpose should be provided in the legislation, but without eliminating the audits conducted by the General Accounting Office.

7. Relationship of TVA expenditures to the national budget

The proceeds of TVA bond issues as well as power revenues, would be kept in a separate fund in the Treasury or in commercial banks, or could be invested temporarily in securities approved for investment of national bank funds. Except for appropriations from the Treasury, and payments to the Treasury for the purposes of (*a*) paying interest on bonds held by the Treasury, (*b*) reducing the appropriation investment in the TVA power system, and (*c*) paying a return on such investment, the receipts and expenditures of the TVA power system would not be considered in determining the amount of any national budgetary deficit or surplus, but would be accounted for outside the regular Federal budget. The Treasury would be authorized to credit its holdings of TVA securities against the obligations to which the limitations on the national debt apply, so that its purchases of TVA securities would not affect the amount of the national debt.

Section 302 of the Government Corporation Control Act (31 U. S. C. sec. 867) requires Government coprorations to keep all of their funds in the United States Treasury with the exception of temporary checking accounts not in excess of $50,000 in any one bank. In connection with the issuance of bonds to the general public it will be necessary to make large deposits in commercial banks for payment of service charges on the bonds and for other purposes. Therefore, TVA should be exempt from this provision of the Government Corporation Control Act.

It is more economical to sell bonds in the private investment market by means of a few large issues a year rather than numerous small issues. TVA would therefore sell enough bonds at one time to provide the money needed for its construction program for several months ahead, and at times would have large balances of borrowed money on which it would be paying interest charges. TVA also requires a substantial amount of working capital. These funds should be put to work in the manner common in industry, by investment in securities which would yield a return partially offsetting TVA's interest payments. The legislation should authorize TVA to follow general commercial practice in this respect.

Bonds sold to the public by TVA would not be a part of the national debt, since they would not be guaranteed by the Treasury. Likewise, the construction of facilities with the proceeds of revenue bonds should not affect the measure of a Federal budget deficit or surplus. The amount of any TVA bonds held by the Treasury, being fully supported by revenues, should likewise be deducted from the total of outstanding public debt obligations in relating them to the debt limit.

CONCLUSION

The tests of any plan for financing the future power requirements of the TVA system are whether it is fair to the Government, the investor, and the power consumer, and whether it is workable. In the opinion of the staff the plan herein proposed meets these tests. The plan would fully protect the interests of

the Federal Government as the owner of the TVA system; it would insure a sound security for investors; and it would provide the means to meet the electric power needs of the consumers of the Tennessee Valley region promptly and at reasonable rates. The TVA Act provides an administrative framework which permits the TVA to discharge its responsibilities effectively, and the proposed legislation fits into this framework. With a continuation of TVA's 20-year record of performance, the proposed arrangements in our judgment would provide a feasible and constructive solution of the problem of financing the TVA power system.

Mr. RABAUT. All right; we will resume at 2 o'clock this afternoon.

AFTERNOON SESSION

Mr. RABAUT. The committee will come to order, and Mr. Cannon will resume his interrogation.

LOCATION OF DIXON-YATES PLANT

Mr. CANNON. Mr. Wessenauer, by way of résumé, the Dixon-Yates contract proposes that capacity be added for use by TVA on its system, and this capacity would produce power of higher cost than would result from the construction of that added capacity by TVA.

On the other hand, AEC is obliged to purchase power which is more costly to it than power purchased under the contract it already has for power supplied from the TVA's Shawnee plant.

Now, from the beginning TVA has said that these excess costs would be assumed by AEC which was entering into a contract with Dixon-Yates.

Certainly, TVA would never have proposed a plant of this size at the location which was selected for it by Dixon-Yates in order to meet the requirements of the TVA system and, particularly, the demands of the city of Memphis.

We are interested, Mr. Wessenauer, in the size and location of the plant and those other factors which are involved. I wish you would explain why this plant proposed for carrying out the Dixon-Yates contract, both in its size and location is unsuitable for the requirements of the TVA system.

Mr. WESSENAUER. Well, the location of the plant from the TVA point of view is not as desirable as capacity located elsewhere, for two principal reasons. One reason is that the plant is located farther from the coalfields than the plant we would add to our system. The added distance is 55 miles. It results from the fact that the coal, whether it is provided to a plant of the TVA system or the Dixon-Yates plant, would be supplied from the coalfields of Illinois and west Kentucky, so that the coal would have to be brought down the Mississippi River to the plant.

Now, if we were to locate a plant most suitable for our system purposes we would put it farther north and save an estimated six-tenths of a cent per million British thermal units in the transportation of the coal to the plant.

The other principal objection to the location of the plant, from our point of view, is that the plant is on the opposite side of the river from our loads, including the AEC loads, and that means, from the Government's point of view, that a very large expenditure would have to be made for river crossings in order to bring power over the river into the TVA system. From the location point of view it would be much more desirable to have the plant on the east side of the

Mississippi River rather than on the west side of the River, and to have it farther north so that it would be closer to the coalfields.

SIZE OF DIXON-YATES PLANT

As to size, when we proposed the Fulton plant we proposed a plant which was geared more closely to the requirements for power in that area, a powerplant of approximately 450,000 kilowatt capacity and one which was capable of producing perhaps 500,000 kilowatts. The Dixon-Yates plant is to have a capacity of 650,000 kilowatts or more, and to deliver 600,000 kilowatts into Memphis.

One of the problems there is the absorption of the capacity of this plant in that area without having to build extensive transmission lines into the TVA system to use the power.

Now, the Memphis load has been in the neighborhood of 300,000 kilowatts, and we expect that in a few years it would be larger than that. There would be a serious problem of absorbing as much as 600,000 kilowatts in the initial years of operation, for without that much load in the neighborhood of Memphis in those initial years, transmission facilities would have to be built to carry that power beyond Memphis back into the system to be used. The problem is particularly acute during the offpeak hours that is, during the night hours, when the Memphis load drops down to about one-third of its peak requirements, for then we would have to handle not just the Dixon-Yates power in excess of the daytime load of Memphis of over 300,000 kilowatts, but all the surplus over 100,000 kilowatts of nighttime Memphis load, for transmission back into the system to be used.

All that is based on the assumption, of course, that Memphis accepts Dixon-Yates power, for as we discussed this morning it has been assumed that the power would be put into the system at that point. If Memphis takes some other action on this matter then, of course, the problems are magnified many fold of attempting to handle the power from that plant over the TVA system.

Mr. CANNON. In other words, if TVA had been building a plant for the purpose of carrying out its contractual obligations, and a plant that would have operated most effectively in relation to the rest of the system—a plant which would have produced the required power at minimum cost—it would not have built this plant at this point?

Mr. WESSENAUER. No, sir. Obviously we would have built it on the east side of the river, and we would have built it farther north, and we would not have built it quite as large. The indication of what we would have done is the fact that our recommendation for a plant in that area was the Fulton plant which would be north of Memphis and on the east side of the river, and initially would be a smaller plant.

Mr. CANNON. You would not have built it on that side of the river, you would not have built it that far away from the fuel supply and you would not have built that large a plant?

Mr. WESSENAUER. Yes, sir; that is right, sir.

LOCATION OF DIXON-YATES PLANT

Mr. CANNON. Now, the fact that such a plant is recommended at this time for this purpose would seem to give credence to the grapevine story that is going around to the effect that this plant is really

being built for another purpose, that it is being built so that when it is finally taken over by the private power people it would be better adapted for their purposes as a private company. Have you heard any such intimation, Mr. Wessenauer?

Mr. WESSENAUER. Well, of course, the arrangements were made with AEC by this MVGC company formed by the Dixon-Yates group, and one of the considerations obviously was that when AEC might want to cancel its contract with the company its sponsors would want the plant where the power capacity could be absorbed. I assume the company recognized that at that time, and I assume AEC did also.

From the standpoint of the company which is building the plant, or at least from the standpoint of its sponsors, the location of the plant has merit because the principal sponsoring system, the Middle South Utilities Co., has operating companies located in Arkansas and Louisiana which would take the power back into those systems. From their point of view the west side of the river is, perhaps, more satisfactory, but meanwhile it will cost the Government a lot of money to get the power across the wide Mississippi River.

Mr. CANNON. And if they expect, eventually, to take it over, then building such a plant over there on that side of the river would better suit their purposes than one which would be approved and built by TVA if they were building it. If this plant had been built where it would have been reasonable and practical, and where it would have been in the logical position, site, or location you would not have found it necessary to build this transmission line across the river?

Mr. WESSENAUER. No, sir, because we would have connected it into our system on the east side of the river and would have thereby avoided an expensive river crossing.

APPROPRIATION FOR TRANSMITTING DIXON-YATES POWER

Mr. CANNON. That is one of the unnecessary costs which would have been avoided if TVA had been building the plant where it should be built.

Strange to say the budget at this time asks for $6,500,000 with which to build a transmission line across the river. At the same time, it becomes apparent that it will be many years before such a transmission line can be used, even if it is built, because litigation is delaying indefinitely the construction and operation of the proposed plant.

So we have just been apprised.

The newspapers are carrying notices of the suit by the State of Tennessee, and also statements by the attorney general of the State of Tennessee who is prosecuting the suit which makes it evident that, in the course of the routine procedure in the Federal courts it would be quite a while before the legal difficulties in the way of construction and operation can be cleared away.

In the meantime, can you give us any reason why we ought to build a transmission line to a plant that has not been built, and that will not be built for an indefinite time?

Mr. WESSENAUER. Well, sir, the budget which we are presenting here was prepared on the basis that the Dixon-Yates plant would be completed by a certain time, and if the Government is going to be in

a position to utilize that power, the transmission lines would need to be built for that purpose. Our recommendation was that we would need to have some money with which to start construction in order to make sure that we would have lines to take the power into the TVA system.

I do not know what the outcome of these suits will be, or how long they will be pending. I can only plan as an engineer based on the assumption that we have had here. For that reason we have requested next year $6,500,000 to begin the construction of the lines, which will cost in the neighborhood of $10 million in all. If the plant is never built, then obviously the lines would never be required.

Mr. CANNON. You must concede, Mr. Wessenauer, that your assumption is based on an erroneous hypothesis that within the time covered by this budget, or, for that matter, within the time covered by the next budget, this plant can be in operation, or producing, so why provide $6,500,000? Would the changed circumstances change your recommendation that this $6,500,000 be appropriated at this time in this bill?

Mr. WESSENAUER. If we knew that their plant would not be built, and that there would be no necessity for TVA to accept the power, the lines would not be required. On the basis of the conditions of the contract which AEC entered into with Dixon-Yates, to make it effective, and for TVA to work out arrangements with AEC to handle the power, part of those arrangements would require the building of these lines for its transmission.

Mr. CANNON. In other words, the basis on which you have made this estimate no longer obtains. That being true, if you were again preparing a budget, you would not include this $6,500,000, because there is no need of funds to build a transmission line to a plant which does not exist and cannot be in operation, even under the most favorable circumstances, within the next 2 or 3 years?

Mr. WESSENAUER. I do not know, sir, that the plant will not be built.

Mr. CANNON. You would understand that any legal difficulties involved must be cleard away before you can start production.

Mr. WESSENAUER. Yes, sir; I would think so.

Mr. CANNON. How long would it take after construction of this plant is started before it could be producing current?

Mr. WESSENAUER. The reported construction period for the plant was supposed to be completed in 27 to 30 months from now.

Mr. CANNON. At least two and a half years, then?

Mr. WESSENAUER. Yes, sir.

Mr. CANNON. Even if you started it immediately it would be two and a half years, and if you take into consideration the legal difficulties involved it is hard to estimate how many years it would take. Certainly there is no immediate need for this $6,500,000 at this time.

Mr. WESSENAUER. The request for $6,500,000, Mr. Chairman, is on the assumption that the plant will be in service late in 1957.

While that seems to be a long time from the standpoint of building transmission lines, this is a complicated transmission problem, because we have to find the proper place to cross the river, and the foundations will be deep for the river towers, and the river towers will be expensive to build.

We have not yet found the appropriate rights-of-way around the city of Memphis to the places where the lines would tie into the TVA system. I would not want to wait so long that we find we have a plant ready to produce power and have no transmission lines built.

Mr. CANNON. That assumption having fallen, the recommendation falls. If it will require 2½ years after they start construction before you need this transmission line there is no need to be in any great hurry about providing money for it at this time.

Mr. WESSENAUER. We would not want to start before they start building the plant.

COST OF DIXON-YATES POWER

Mr. CANNON. According to our estimates, and this is directly in issue, the effort today is to decrease the cost of all production, and the cheaper we can produce current the greater service we can render the public in general.

How does the cost of the Dixon-Yates power proposition compare with the cost of TVA power if additional capacity is added to that system, which the Dixon-Yates contract is planned to avoid? Give us your idea as to the relative cost of power in those two situations.

Mr. WESSENAUER. We participated in an analysis which was made along those lines last spring, and we put in the record before the Joint Committee on Atomic Energy our views on that.

The TVA engineers made a comparison of the costs and it showed that the annual costs to the Federal Government under the Dixon-Yates plan would be approximately $5,500,000 more than if the Government proceeded to add capacity to the TVA system.

There were some differing views with respect to that, and the other engineers who worked on it, representing the Bureau of the Budget and the AEC, had an estimate of about $3,700,000 more per year.

While they, too, estimated that this proposal would be more expensive to the Government than the building of a plant on the TVA system, the decision was to do that in order to handle the capital outlay of some $100 million through private financing.

Mr. CANNON. The thing to do in the interests of economy, then, would be to build this plant on the Tennessee side of the river, and to turn the job over to TVA.

TRANSMISSION LINE

Furthermore, if the city of Memphis is not going to accept this current from MVGC, or from the Arkansas plant—and the mayor of Memphis in the letter which we read here this morning states very emphatically that it is not—why would you need a transmission line across to Memphis?

Mr. WESSENAUER. Well, sir, the assumption under which the plant site was located was that they would be delivering that power into Memphis.

Mr. CANNON. Conditions have entirely changed. Developments are entirely different from what were expected at the time this assumption was made.

Mr. WESSENAUER. The assumption was that the Memphis load would absorb Dixon-Yates power. If this is changed, as the mayor's letter indicates, the whole plan ought to be changed.

Mr. CANNON. From every business point of view, it seems absurd to carry out the proposal made at the time this estimate was proposed to appropriate $6,500,000 for building a transmission line.

PRESENT STATUS OF DIXON-YATES PLAN

What is the present status of the Dixon-Yates plan?

Mr. WESSENAUER. Well, there is a contract between AEC and the MVGC, which is the company which Mr. Dixon and Mr. Yates organized to carry out their part of the arrangement.

SEC has granted an order to the company to sell common stock in the amount of some $5,500,000.

That order is being litigated by the State of Tennessee and some of the communities in the State.

The company has not yet sold its bonds, which would provide the rest of the money which is needed for the construction of the plant. That would require additional hearings before the SEC which, as I understand it, have been postponed to some time next month.

Our negotiations with AEC, as I indicated this morning, have moved along slowly.

The assumptions that we are following are that the arrangements would be worked out between us in some manner whereby TVA would handle the power on a basis which would be at no cost and no benefit to TVA from the standpoint of its own operations. Now, working out those arrangements and arriving at the figures is proving difficult. It involves studies and estimates of conditions in the future in order to work out an arrangement which would be satisfactory both to TVA and to AEC. As I stated earlier, we still have a contract with AEC for supplying them 600,000 kilowatts, which we had been expecting to be relieved of by the fall of 1957.

Mr. CANNON. And TVA is bound by that contract?

Mr. WESSENAUER. Yes, sir.

Mr. CANNON. No steps have been taken to relieve TVA of responsibility under that contract?

Mr. WESSENAUER. No, sir; except these negotiations which we are engaged in at the present time.

Mr. CANNON. Which may or which may not result in anything definite. In view of the fact, then, that this money has not yet been provided, and that the proposition is in litigation, is there any immediate hope of providing the current required to supply the power needs in this section?

Mr. WESSENAUER. We are increasingly concerned about the problem of meeting the load requirements in the winter of 1957 and 1958, and later, in the light of the delays which are occurring in the beginning of that plant. I think I said earlier that it was supposed to take 27 to 30 months, but I was measuring that period of time from now on the basis of the original schedule that construction would be started last fall. In the proposal the estimated time was 32 months for the first unit and 36 months for the complete plant, from the time that the contract arrangements become effective.

Mr. CANNON. You have not estimated how much time the litigation will consume?

Mr. WESSENAUER. I fear I cannot do that.

Mr. CANNON. Under the circumstances, then, with the imminent necessity of need for additional power in the Memphis area, would you recommend the Fulton site?

Mr. WESSENAUER. If there is not to be a Dixon-Yates plant, we certainly would recommend that additional capacity be provided at the Fulton plant.

Mr. CANNON. As a matter of fact, that is about the only alternative, if you are to have any hope of having additional power within a reasonable time?

Mr. WESSENAUER. Well, that is the most economical arrangement; yes, sir.

Mr. CANNON. How long would it take to build the Fulton plant? How long would it take to complete it and what will it cost?

Mr. WESSENAUER. It would take us approximately 32 months from the time of authorization to the initial operation of the first unit.

Mr. CANNON. And what would its approximate cost be?

Mr. WESSENAUER. As we estimate it the cost of the initial two-unit installation at Fulton will be $90 million.

Mr. CANNON. This is the estimate originally submitted to us by the Tennessee Valley Authority?

Mr. WESSENAUER. Yes, sir; I believe the committee asked for the estimate under previous circumstances.

Mr. CANNON. And that estimate is still accurate?

Mr. WESSENAUER. Yes, sir.

Mr. CANNON. Mr. Chairman, may I include this in the record?

Mr. RABAUT. Without objection, the estimate on the Fulton plant will be incorporated in the record.

(The matter above referred to is as follows:)

Fulton plant

	2-unit plant [1]	4-unit plant [2]
Steam production plant:		
Land and land rights	$300,000	$300,000
Structures and improvements	19,260,000	29,145,000
Boiler plant	25,765,000	47,780,000
Turbogenerator plant	16,678,000	32,786,000
Accessory electrical equipment	3,500,000	6,800,000
Miscellaneous powerplant equipment	1,300,000	1,470,000
Communication equipment	100,000	125,000
Total steam production plant	66,903,000	118,406,000
Transmission plant	3,230,000	6,500,000
Total direct cost	70,133,000	124,906,000
General expense:		
Employee housing	1,200,000	1,250,000
Project general expense	7,500,000	10,484,000
Total general expense	8,700,000	11,734,000
Subtotal	78,833,000	136,640,000
Contingency	11,167,000	17,360,000
Total project	90,000,000	154,000,000

[1] Rated: 450,000 kilowatts; capability: 500,000 kilowatts.
[2] Rated: 900,000 kilowatts; capability: 1 million kilowatts.

Mr. CANNON. Then you would say that while every other proposal to meet this power need is nebulous, uncertain, and indefinite, you could depend on having sufficient power to supply these urgent needs in 32 months through the construction of the Fulton plant?

Mr. WESSENAUER. We could construct the Fulton plant in 32 months and that will help materially by the end of the winter of 1957–58.

TVA'S RECORD OF COST ESTIMATING

Mr. CANNON. Now this committee has had some unfortunate experiences with estimates of cost and time on construction projects. Just how much dependence can we place on these estimates as to cost?

Mr. WESSENAUER. The TVA record of costs experienced in actual performance compared with the estimates submitted to the committee at the time the projects were initiated is a good one. I recently took a look at those numbers and, based on our present information as to the probable completion costs of the projects we now have underway, I believe the record will show we have completed all our construction considered in total, within one and a fraction percent of the estimates which were submitted to the Congress at the time they made the initial appropriation for the projects.

Mr. CANNON. The clerk hands me a memorandum issued by the Tennessee Valley Authority, in this connection giving the record. Under this tabulation, taking into consideration past estimates and the ultimate costs in comparison with performance, you seem to have a very satisfactory record in that respect, if I correctly interpret this tabulation.

Mr. WESSENAUER. This is a table which the clerk asked TVA for. It shows, for example, on our projects through 1947 we estimated about $598 million as the cost and they were built for $616 million, which is within 3 percent. The projects since that time would bring the total up to about $1,561 million, and our last figures indicated we will build them for $1,541 million, or approximately $20 million less than the estimates on which the projects were initially based, a difference of 1.3 percent.

Mr. CANNON. From the record, then, of past accomplishments, we have every reason to believe we can depend on the estimates on the Fulton plant, both as to cost and time required for construction?

Mr. WESSENAUER. Yes, sir; I believe we have had a good record.

Mr. CANNON. On the other hand, the Arkansas plant, the Dixon-Yates plant——

Mr. RABAUT. Before you leave that, I think we ought to put this in the record.

Mr. CANNON. Mr. Chairman, I submit it for inclusion in the record.

Mr. RABAUT. This Comparison of Estimates with Actual Costs—Major TVA-Constructed Projects—without objection, will be placed in the record at this point.

(The matter above referred to is as follows:)

Comparison of estimates with actual costs—Major TVA constructed projects

	Final cost from published technical reports		Estimates when funds were requested			Initial power	Source of estimate
	Amount	Number of units	Amount	Number of units	Construction started		
Norris	$30,508,024	2	$36,025,230	2	Oct. 1, 1933	July 28, 1936	TVA formal report to Congress, March 1936.
Wheeler	29,294,720	2	32,116,537	2	Nov. 21, 1933	Nov. 9, 1936	Do.
Pickwick	29,701,267	2	32,529,685	2	Mar. 8, 1935	June 29, 1938	Do.
Hiwassee	15,922,637	1	15,250,000		July 15, 1936	May 21, 1940	Do.
Guntersville	31,098,760	3	29,500,000		Dec. 4, 1935	Aug. 1, 1939	Do.
Chickamauga	33,730,996	3	31,650,000		Jan. 13, 1936	Mar. 4, 1940	Do.
Kentucky	116,302,296	5	112,000,000	6	July 1, 1938	Sept. 14, 1944	Independent offices appropriation, fiscal year 1939, p. 919.
Watts Bar	32,976,647	5	35,000,000	3	July 1, 1939	Feb. 11, 1942	Independent offices appropriation, fiscal year 1940, p. 1720.
Fort Loudoun	34,940,739	2	28,500,000	2	July 8, 1940	Nov. 9, 1943	Independent offices appropriation, fiscal year 1941, p. 1622.
Cherokee	29,765,267	2	34,500,000	3	Aug. 1, 1940	Apr. 16, 1942	Deficiency, fiscal year 1941, p. 2.
Douglas	39,496,985	2	30,500,000	2	Feb. 2, 1942	Mar. 21, 1943	2d supplemental, fiscal year 1942, p. 17.
Fontana	69,043,688	2	48,000,000	3	Jan. 1, 1942	Jan. 20, 1945	Do.
Chatuge	7,036,589		10,000,000		July 17, 1941	Feb. 12, 1942[1]	1st supplemental, fiscal year 1942, p. 11.
Nottely	5,379,709				do	Jan. 24, 1942[1]	Do.
Ocoee No. 3	7,988,050	1	6,600,000	1	July 17, 1941	Apr. 30, 1943	Do.
Apalachia	22,558,532	2	20,000,000	2	do	Sept. 22, 1943	Do.
Watts Bar steam	18,866,876	4	18,200,000	4	Aug. 8, 1940	Feb. 15, 1942	Independent offices appropriation, fiscal year 1943, p. 850.
Watauga	31,541,053	2	28,900,000	2	July 22, 1946	Aug. 30, 1949	Government corporations, fiscal year 1947, p. 927.
South Holston	30,522,504	1	30,650,000	1	Aug. 4, 1947	Feb. 13, 1951	Government corporations, fiscal year 1948, p. 31.
Additional units			18,000,000	6			
Subtotal	616,675,339	41	597,921,452	41			
Boone	27,428,000	3	27,500,000	3	July 1, 1950	Mar. 16, 1953	Independent offices appropriation, fiscal year 1951, p. 986.
Fort Henry	12,653,000	2	14,500,000	2	May 1, 1951	Dec. 5, 1953	Independent offices appropriation, fiscal year 1952, p. 552.
Johnsonville	93,742,000	6	98,000,000	6	May 12, 1949	Oct. 27, 1951	Do.
Widows Creek	93,000,000	6	103,000,000	6	Mar. 29, 1950	July 1, 1952	Do.
Kingston	196,000,000	9	213,000,000	9	Jan. 11, 1951	Feb. 8, 1954	2d independent offices appropriation, fiscal year 1954, p. 10.
Colbert	108,500,000	4	110,500,000	4	Sept. 12, 1951		Independent offices appropriation, fiscal year 1953, p. 1334.
Shawnee	215,000,000	10	216,500,000	10	Jan. 6, 1951	Apr. 9, 1953	2d independent offices appropriation, fiscal year 1954, p. 10.
Gallatin	85,000,000	2	85,000,000	2	Aug. 5, 1952		Supplemental appropriations bill, fiscal year 1953, p. 76.
John Sevier	94,000,000	3	96,000,000	3	July 28, 1952		2d independent offices appropriation, fiscal year 1954, p. 10.
Grand total	1,541,998,339	86	1,561,921,452	86			

[1] Closure, no generating units installed initially.

final cost column are the estimates currently appearing in our budget presentation to the Bureau for 1956.

The figures in the first section (down to subtotal) do not include switchyards but those

† Closure, no generating units installed initially.

NOTE.—The above shows an underrun of $19,923,113 on estimated costs of $1,561,921,452 or approximately 1.3 percent.

The upper section down to the subtotal duplicates the tabulation printed in the Senate hearings on TVA's appropriation for fiscal year 1951 on p. 1067, except that final costs have been inserted instead of the estimates for Watauga and South Holston. In this section the item "Additional units" represents the addition of 6 generating units at an average price of $3 billion per unit to the estimate column to equalize the number of generating units in both columns. The lower section has been added covering additional completed projects and all other major projects now under construction. The figures for them in the final cost column are the estimates currently appearing in our budget presentation to the Bureau for 1956.

The figures in the first section (down to subtotal) do not include switchyards but those for the lower section do include switchyards. (This is in order to conform with the estimates as presented to Congress.)

In the column "Source of estimates" (except for those used from TVA's 1936 Report to Congress), the references are to the estimates contained in the House committee hearings at the time funds were requested to begin construction, except, where additional generating units have subsequently been added the reference is to the total project cost proposed at the time funds were requested for the additional units.

Source: Chief Engineer's Office, September 1954.

Mr. JENSEN. Mr. Chairman, does that tabulation show what the original estimate of cost of each one of these projects was to be?

Mr. WESSENAUER. Yes, sir. It shows the estimate which was submitted to the Congress at the time we asked for the original appropriation with which to begin each project.

Mr. JENSEN. And you said, I believe, that the actual costs of the projects have come within 1 percent of the original estimates?

Mr. WESSENAUER. Yes, sir.

Mr. JENSEN. Is that true during the period when costs were rising so fast?

Mr. WESSENAUER. Yes, sir—not with respect to each individual project, but, taking the whole construction, we have come within approximately 1 percent. And you can see by the tabulation that we have compared each project. The amount estimated is shown in the second column and the first column gives the actual cost we encountered in the building of the projects.

Mr. JENSEN. What I cannot understand is how you could look into the future and determine what the increased cost was going to be of each one of these projects over the period it took to construct them. And as I read this tabulation it appears you have been psychic in your estimation of the cost projected into the future. That is the thing that I do not quite understand how you could so operate; that you could say "This project is going to be completed in 2 years, or 3 years, and is going to cost so much" during a period when costs were increasing so rapidly.

I do not want to take much time, Mr. Chairman, but how did you look into the future and estimate, for example, on the Norris project, that it would cost $30,508,024. That was your original estimate?

Mr. WESSENAUER. No, sir. I believe you are reading this just the reverse, Mr. Jensen. The second column is the original estimate.

Mr. JENSEN. The second column is the original estimate?

Mr. WESSENAUER. Yes, sir.

Mr. JENSEN. Well, you have things kind of reversed. Actually, for all of these 20 projects you show here, the original estimate was $597,921,452; is that right?

Mr. WESSENAUER. That is correct.

Mr. JENSEN. And your actual cost was $616,675,339?

Mr. WESSENAUER. Yes, sir, for the projects through 1947.

Mr. JENSEN. And I presume the average construction would be 30 months?

Mr. WESSENAUER. Two to three years.

Mr. JENSEN. Longer than that on the hydroplants, of course?

Mr. WESSENAUER. It might be nearer 3 years on the hydro, sir.

Mr. JENSEN. How did you look into the future and anticipate what the costs were going to be as near as you have done? You must have been quite psychic.

Mr. WESSENAUER. Well, I am glad it looks that way. Of course, one thing that helped us is that the estimates were made close upon the initial appropriation. In other words, those were not projects which had been proposed and estimated for 3 or 4 years before we asked for the first amount of money. The amount we estimated was determined close to the time the construction began. I think the record reflects, too, the fact that our engineers have been conservative, that they were

making sure of their cost data, and that they made reasonable allowance for the prospect of costs increasing, which you can do somewhat from watching cost trends very closely.

Mr. JENSEN. They sort of looked into the crystal ball, in other words?

Mr. WESSENAUER. Well, we have to do that as best we can. Some few of those costs, you notice, Mr. Jensen, were much larger than our estimates and others were lower; but the overall total came within this small percentage.

Mr. CANNON. I can understand some surprise on the part of the committee, because we had some outstanding surprises as to increased costs over estimates of some projects.

Mr. JENSEN. That is exactly why I mentioned the fact it is so entirely different from what it used to be.

Mr. RABAUT. It seems that they took the ball and went ahead with it.

Mr. JENSEN. Apparently. Mr. Chairman, I would like to have the tabulation in the record.

Mr. RABAUT. It has already been inserted.

Mr. CANNON. As the chairman also recalls, this record was made at a time of rapidly increasing costs throughout the country. Always there was increased cost of material, labor, and every item entering into construction and yet, in building these plants, TVA was able in a very remarkable way to keep within the estimates made at the time the plants were proposed.

Mr. JENSEN. I think you will find some of those projects were built during a era when costs were going down. Is not that the fact, also—a few of them?

Mr. WESSENAUER. Well, sir, I do not know that they were going down much at any time in this period. They may have been fairly stationary at times. Some of the construction began in 1935 and 1936; but, beginning in 1940, the costs did go up sharply during the war period.

Mr. JENSEN. And during the construction of the most of these projects you list, prices were quite stable; is that right?

Mr. WESSENAUER. Well, the early ones were built when prices were stable, but the ones during the war, of which we had about 10 or more under construction at once, were not.

Mr. JENSEN. Some of them were constructed during the price decrease era, or during the era when prices were quite normal, and others were constructed after the war started and prices skyrocketed?

Mr. WESSENAUER. That is true.

Mr. CANNON. But in the aggregate, taken as a whole, there was a constantly and unprecedented increase in costs of construction during the period in which those plants were erected.

Mr. WESSENAUER. From the beginning to the end, yes; but the cost changes during the construction of each one were not unprecedented.

EBASCO'S RECORD AT JOPPA

Mr. CANNON. Let me ask you this: Turning from this rather remarkable record of accomplishment, what engineering firm will serve in the construction of the Dixon-Yates plant?

Mr. WESSENAUER. According to the press, the Ebasco is to be used to do the designing of the plant. I do not believe they have selected the construction company.

Mr. CANNON. The intent, then, is for Ebasco to serve as the engineering firm on the Dixon-Yates plant?

Mr. WESSENAUER. For the design; that is my understanding.

Mr. CANNON. Is that the same firm that served in the construction of the Joppa plant?

Mr. WESSENAUER. Yes, sir.

Mr. CANNON. What is their record for efficiency and engineering skill, and results secured, in the construction of the Joppa plant?

Mr. WESSENAUER. The records show that the Joppa plant cost a lot more than they originally estimated.

Mr. CANNON. You would not say, then, that the engineering service in the construction of the Joppa plant was particularly creditable to the firm that engineered it?

Mr. PHILLIPS. You mean to the firm or to the unions?

Mr. CANNON. The firm, Ebasco.

Mr. WESSENAUER. According to the General Accounting Office, it is not very creditable, sir.

Mr. CANNON. So that we have here on the one side a record covering a long period of accomplishment in which the engineering was satisfactory, compared with the construction of the Joppa plant in which it was, as you say, considered unsatisfactory.

And what is the cost of power from the Joppa plant as compared with that of the Shawnee plant? As I understand it, we have in close proximity the Joppa plant constructed under the engineering direction of the Ebasco firm, and the Shawnee plant constructed by TVA and, when you compare the two, you find there was official criticism of the engineering on the Joppa plant, while the construction of the Shawnee plant was in every respect in accordance with the contract, both as to time and cost, and it was erected by TVA. However, as to the relative cost of power when these two plants were erected, what could you say as to the relative cost of power produced at the Joppa plant by the Ebasco people and the cost of power produced at the Shawnee plant by TVA?

Mr. WESSENAUER. I believe that TVA power has been costing about 3.55 mills per kilowatt-hour and the figures which have been put in the record by AEC from time to time indicate that the power from the Joppa plant will cost somewhat over 4 mills per kilowatt-hour.

Mr. RABAUT. There is a difference of 0.45 mills?

Mr. WESSENAUER. About half a mill.

DIFFERENCE IN TVA AND EEI POWER COSTS AT PADUCAH

Mr. CANNON. We have here a table submitted to the committee by the Atomic Energy Commission for the fiscal year 1955, giving relative costs at these two plants, which is the point before us at this time. I would be glad if you would interpret this table.

Mr. PHILLIPS. Please identify it, Mr. Chairman.

Mr. RABAUT. He identified it as submitted by AEC.

Mr. WESSENAUER. This table is marked "Atomic Energy Commission, fiscal year 1955. Power consumption and charges at Paducah,

Ky." and shows for this fiscal year through February 1955, that the permanent power, which is power which comes from the Shawnee plant, averaged 3.58 mills per kilowatt-hour, and power from Electric Energy, Inc., supplying power from the Joppa plant, was apparently priced at 3.82 mills per kilowatt-hour.

Mr. CANNON. Give us the figures tabulated under "Interim."

Mr. WESSENAUER. The figures show TVA supplied about 2.25 billion kilowatt-hours of interim power for this fiscal year through February 1955, at an average of 5.57 mills per kilowatt-hour, and Electric Energy, Inc., supplied interim power of about the same amount in kilowatt-hours through March 1955, at 7.61 mills per kilowatt-hour.

Mr. PHILLIPS. May we ask if the figure of 3.82 included taxes, or not?

Mr. CANNON. Taxes are included; all costs are included.

Mr. PHILLIPS. Then the 3.58 would not include taxes?

Mr. WESSENAUER. TVA does not pay any taxes to the States for power delivered to Federal agencies.

Mr. PHILLIPS. Then those figures are not comparable, are they, Mr. Chairman?

Mr. RABAUT. Do you make any payments to the States in lieu of taxes of any kind?

Mr. WESSENAUER. We do make payments to the States in lieu of taxes on all sales of power to private companies and local agencies, but not on power sales which are made to the Federal Government.

Mr. RABAUT. Not on power sales made to the Federal Government?

Mr. WESSENAUER. That is right.

Mr. RABAUT. That is the difference.

Mr. PHILLIPS. But the Joppa plant included about 3 mills, as I recall, tax to local, State, and Federal Government per kilowatt-hour. I was just suggesting they were not comparable.

Mr. RABAUT. As far as the Federal Government is concerned, whatever they deliver to the Federal Government they do not pay any taxes on.

Mr. CANNON. In this connection may I ask at this time if these figures before you have been supplied by the Atomic Energy Commission?

Mr. WESSENAUER. Apparently, sir.

Mr. RABAUT. Do you want to put this in the record?

Mr. CANNON. Yes, we would like to have that in the record.

Mr. RABAUT. Without objection, this Atomic Energy Commission statement on power consumption charges at Paducah, Ky., will be placed in the record.

(The matter above referred to is as follows:)

Power consumption and charges at Paducah, Ky.

Quarter ending—	Permanent			Interim		
	MWH	Dollars	Mills per kilowatt-hour	MWH	Dollars	Mills per kilowatt-hour
TVA:						
September 1954	1,083,183	$3,853,030	3.56	633,445	$4,328,776	6.83
December 1954	1,116,804	3,960,874	3.55	877,354	4,690,169	5.35
January and February 1955 [1]	888,198	3,238,403	3.65	746,794	3,560,938	4.77
Year through February 1955	3,088,185	11,052,307	3.58	2,257,593	12,579,883	5.57
EEI:						
September 1954 [2]	1,081,932	4,053,395	3.75	544,139	4,109,367	7.55
December 1954	1,100,292	4,266,362	3.88	859,765	6,564,554	7.64
March 1955	1,064,654	4,073,836	3.83	781,032	5,947,007	7.61
Year through March 1955	3,246,878	12,393,593	3.82	2,184,936	16,620,928	7.61

[1] TVA's bill for March has not been submitted; delay in rendering bill is result of special situation involving charges for power furnished during an outage of generators serving Paducah plant.
[2] The 4th generator at the Joppa plant was placed in commercial operation on Aug. 4, 1954.

FUEL COSTS

Under the TVA contract, billings for a 6-month period are based on the average fuel cost for the preceding 6 months. During the period July-December 1954 the rate was 16.77 cents per million B. t. u.'s and for the period January-June 1955 is 17.06 cents per million B. t. u.'s.

EEI bills are based on actual fuel costs experienced each month. For the period involved in the table the cost per million B. t. u.'s is:

	Cents		Cents		Cents
July	19.12	October	18.59	January	18.30
August	18.66	November	18.23	February	18.40
September	18.77	December	18.34	March	18.14

EEI RATE AT FULL-SCALE OPERATION

At full-scale operation, it is presently estimated that AEC will receive 6,310 million kilowatt-hour per year from EEI at an estimated annual cost of $24,147,600 or 3.83 mills per kilowatt-hour based on a fuel cost of 17.42 cents per million B. t. u.'s.

Mr. CANNON. At this point, would you say you could substantiate these figures from TVA's records already submitted?

Mr. WESSENAUER. Our own records would probably substantiate the figures for TVA shown there. They look about right and I assume they are taken off of TVA's bills. I remember the average figure for the first half of this fiscal year of 3.55 mills. That is within 1 percent of the estimate we made before the Shawnee plant was started. I do not have the full information with respect to Electric Energy, Inc. I used the figure of 4 mills, earlier, based on testimony the Atomic Energy Commission has several times put in hearings, for example before the Joint Committee. These seem to be somewhat different numbers for EEI.

Mr. CANNON. Summing up the whole matter, the figures taken as a whole and substantiated by TVA's statistics show beyond a question of a doubt greatly increased cost of production for the Joppa plant over the Shawnee plant?

What do you say about the comparative cost of producing power?

Mr. WESSENAUER. It costs them more to produce power at their plant than it does TVA to produce power at the Shawnee plant.

Mr. CANNON. In other words, it costs more to construct and, after construction, it costs more to produce the power?

Mr. WESSENAUER. They spent about $200 per kilowatt and we spend about $145 per kilowatt, in terms of capital costs. And the record will show—this table shows—that we have had a little lower fuel cost than they have. Both elements would indicate that the cost of producing power is less at the Shawnee plant than at the Joppa plant.

Mr. RABAUT. Does EEI pay a Federal tax on power delivered to the Government?

Mr. WESSENAUER. Yes, sir—well, they pay a Federal tax on whatever earnings they make on power delivered to the Government.

EEI APPLICATION FOR TAX AMORTIZATION

Mr. RABAUT. Do they have any amortization on their plant?

Mr. WESSENAUER. I believe the amortization of plant investment was not included in their bills through the first month or so of this fiscal year. Or do you mean rapid tax amortization?

Mr. RABAUT. Yes.

Mr. WESSENAUER. Of that I am not sure. There was one time when they requested it but I don't think they ever succeeded in getting it. I am not sure.

Mr. RABAUT. Will you find out and place it in the record?

Mr. WESSENAUER. I will do my best.

(The information requested is as follows:)

Electric Energy, Inc. made application for rapid tax amortization on August 14, 1951, for $191 million and was assigned tax amortization number 13746. The request had not been granted or withdrawn when the granting of any more certificates to utilities was suspended some time ago. The Office of Defense Mobilization has recently started to consider again utilities' requests for rapid tax amortization.

EEI AND TVA FUEL COSTS

Mr. CANNON. Will you also comment on the fuel cost given in the same statement by the Atomic Energy Commission?

Mr. WESSENAUER. Our fuel cost as indicated on this table was 16.77 cents per million B. t. u.'s for the period affecting the billing for July–December 1954, and 17.06 cents per million B. t. u.'s for the period affecting the billing for January–June 1955.

The table states that EEI bills were based on fuel costs ranging from 19.12 cents per million B. t. u.'s in July down to 18.14 cents per million B. t. u.'s in March.

Mr. CANNON. What is your deduction, then?

Mr. WESSENAUER. TVA was procuring fuel at costs over 1 cent per million B. t. u.'s lower than EEI.

Mr. CANNON. That means, if by any chance the Dixon-Yates plant were built after litigation has finally been concluded, you would expect the same higher cost of fuel for the Dixon-Yates plant as that indicated in this tabulated statement?

Mr. WESSENAUER. It is possible that would be true in the Dixon-Yates case also, as in this case, but I was primarily pointing out that even if they bought fuel at the mine at the identical price, it would have a longer haul to the Dixon-Yates plant than to our Fulton site.

Mr. CANNON. And consequently a higher cost?

Mr. WESSENAUER. And consequently a higher cost, yes, of 0.6 mill, over and above any difference in the cost of the coal at the mine.

Mr. RABAUT. Is that the full cause of the increased price?

Mr. WESSENAUER. Here?

Mr. RABAUT. Yes.

Mr. WESSENAUER. No; this is a different reason, which I might point out on the map.

Mr. RABAUT. What is the reason for this?

Mr. CANNON. Show us this, if you will, on the map.

Mr. WESSENAUER. These two plants are located very close together. TVA's Shawnee plant is located on the south bank of the river, and the Joppa plant is four miles downstream on the north bank of the Ohio River. We both draw our coal from the fields of Illinois and West Kentucky. I do not have any explanation of the cost differential except that perhaps one of us has been able to buy coal at a little better price than the other one.

General VOGEL. Is there any State tax entering into it?

Mr. WESSENAUER. No, sir.

Mr. RABAUT. The distance would not make any difference across the river, surely.

Mr. WESSENAUER. Mr. Kampmeier buys our coal, and he may have an explanation.

Mr. RABAUT. Do you have any reason for it, or do you want to tell us what he might hold back and say he is a better buyer?

Mr. WESSENAUER. I think there is something in that. I can say it for him.

Mr. KAMPMEIER. I do not buy TVA coal, I only help to, but I appreciate being given a share of the credit for that. There are certain transportation differences, but they would not account for these differences in coal cost. In the case of transportation differences, they work in one direction in the case of coal from Kentucky and in another direction in the case of coal from Illinois. We are situated to obtain coal from Kentucky by rail or barge, where as the Joppa plant, I think receives Kentucky coal only by barge, which could make some difference. They, and we, receive Illinois coal shipped by rail.

Mr. RABAUT. The rail rate is higher than by barge?

Mr. KAMPMEIER. We find usually we can get barge coal cheaper than we can rail coal, so that should not work to their disadvantage except as their supply may be somewhat more limited by not having access to as much Kentucky coal. On the other hand, the coal we receive from Illinois, which represents a rather sizable part, perhaps half, of the coal we burn at Shawnee, has to be carried across the river to our plant; whereas, in the case of the Joppa plant, the coal does not have to be carried across the river. That represents a differential, for Illinois coal, of 15 cents per ton extra transportation cost on our coal to bring it across the river, which would be equivalent to six-tenths cent per million B. t. u. So, if Electric Energy, Inc., and we were to buy the same coal from Illinois, at the same price at the mine, there should be six-tenths cent per million B. t. u. higher cost for us than for them, because of that differential in the transportation cost, instead of their having higher costs as reflected in this table.

Mr. RABAUT. They are having a lower price for transportation and paying more for fuel.

Mr. JENSEN. So the facts are that TVA, which does not pay a Federal tax, can buy cheaper than the private industries which do pay a Federal tax into the coffers of the United States Treasury, without which we could not appropriate any funds. If that were not the case all over the country, where the private taxpayer pays the bill we could not turn around and appropriate that money again for such things as the nontaxpaying TVA and other Government-owned and tax free corporations.

I do not see the justice in that kind of business, but go ahead.

ATOMIC POWER PLANTS

Mr. FOGARTY. Mr. Wessenauer, we hear a great deal of talk now about living in an atomic age. Is there any possibility that projects like TVA will become obsolete in the near future because of atomic energy?

Mr. WESSENAUER. No, I do not believe that would happen. I think this country will be forced to turn in the future more and more to atomic power to supply the very rapidly growing requirements which this Nation has for power. I think as the years go along you will be finding more of the new plants will be atomic plants, rather than of the conventional type; but we still have a ways to go in finding an atomic plant that is competitive in cost with the conventional thermal plant.

Mr. FOGARTY. Is the Government doing anything in that field now?

Mr. WESSENAUER. Yes. The Atomic Energy Commission has encouraged industry to build what I would call pilot plants. They have encouraged the investigation of various possible ways of building atomic powerplants. In other words, there are several routes which the technicians say might be followed to produce power by atomic plants. That has to do with the kind of reactor, the kind of fuel you use in the reactor, the kind of moderator used in the reactor, and so forth.

There are several of those projects underway at the present time out of which the power industry would expect to gain the information to see what the next step would be to provide more economical production by that means. But I do not believe anyone would yet claim they could today build a plant which would provide power as cheaply as the thermal plant.

General VOGEL. May I add something to that? I think it is entirely a matter of economics. In regions where the cost of fuel is quite high, it will be possible at a much earlier date to provide atomic energy than in a region where the fuel cost is relatively low. For instance, it might be economically feasible to build such a reactor in Alaska for power that is there needed.

As you know, Detroit Edison is actively formulating plans for building an atomic reactor in their power service area; but, where they are still in an area where fuel is relatively plentiful and relatively cheap and where the relative cost of the final power is, of course, so much lower than that produced in other regions, it may be a long time for such power to become economical in the Tennessee Valley region.

Mr. FOGARTY. Then according to your estimate, Mr. Wessenauer, the Government is attempting to get industry to do this research, is it not, in atomic energy?

Mr. WESSENAUER. The Atomic Energy Commission itself in its own laboratories and by contractual relationships with various private laboratories has provided and done a vast amount of research work to form the basis for projects for developing atomic power. More recently, since the Atomic Energy Act was revised last fall, they have invited private companies and others to submit proposals whereby they would take some steps toward showing the extent to which this power could be produced, in order to arrive at some further information in the development of atomic power.

For example, there is the project of the Duquesne Light Co. being built near Pittsburgh that will produce atomic power perhaps in a few years. The last information I had was it was going to cost somewhere between 30 and 60 mills per kilowatt-hour. That is not being built in competition with power that costs just a few mills per kilowatt-hour; it was done in order to get experience in building such plants and finding what problems will result in the operation of such a plant.

More recently there have been proposals, as General Vogel said, of the Detroit Edison, the Consumers' Public Power District of Nebraska, and a couple of others. Those proposals are now being considered by the Atomic Energy Commission. They provide that AEC would make available atomic fuel that those plants would need to operate with, and I think it will be a combined venture of AEC and private companies, with the private companies putting up a certain amount of capital for the experiments.

No doubt the AEC people could elaborate on that more than I have been able to do.

Mr. FOGARTY. I intend to ask them the same question I have asked you. The reason I asked that question is I do not know too much about this TVA or atomic energy, either; but I have read a few things about it, and I have read some articles where some scientist claims atomic energy is looking right now to when it gets on its feet that it is going to make projects like TVA and the Northwest power projects obsolete. But you do not believe that?

Mr. WESSENAUER. I cannot conceive of that for some time, for this reason, that the economic factors and the difficulties which we have with atomic power are going to be a long road. I hope and believe it is going to result in more atomic power; but it will come gradually, just as all through the past with coal-burning plants. Less than 20 years ago, to produce power from a steam station called for 1 pound and a third of coal per kilowatt-hour, whereas today modern plants produce a kilowatt-hour with less than eight-tenths of a pound of coal per kilowatt-hour. By virtue of increased economies in the design and planning and construction of these plants, that has been possible. Technological improvement has brought down certain costs during the period of time when costs of construction have gone up, so that today the homeowner has cheaper power than he had 20 years ago.

I believe atomic power will be worked into the economics of the power systems of the United States in much that same way. As we find a way to do it cheaper, those plants will be built in increasing numbers instead of the conventional ones. However, we won't scrap the conventional ones, nor will we even stop building additional ones right away. They will be operated together with the atomic power-plants and in that way will make the most effective use of the invest-

ments already made and the facilities we already have as well as the new ones. Obviously if you were faced with scrapping a major hydroplant and building an atomic plant in its place, you would have to consider that the investment had already been made in the hydroplant; so all it would take to run the hydroplant would consist of supplies and labor amounting to a few tenths of a mill per kilowatt-hour. It would hardly be obsolete and would continue to be used for a long time.

Mr. FOGARTY. You are not like the fellow in the Navy who thought it was foolish to appropriate money to build an atomic powered submarine, are you?

Mr. WESSENAUER. I hope not. Of course, some of the reasons for building atomic powered submarines may be completely different. I assume the economic considerations may be overweighed by the military ones, and I would not pretend to speak to that.

PRICE OF POWER IN VARIOUS REGIONS

Mr. FOGARTY. Do you have any chart showing the cost of electricity per kilowatt-hour in all sections of the country—TVA, the Northwest, and the New England States?

Mr. WESSENAUER. Yes; I have some charts which would show it approximately, in terms of what the residential customer pays for 100 kilowatt-hours.

Mr. FOGARTY. Just tell me what they pay in the Tennessee Valley, what they pay in New England, and what they pay in the Northwest.

Mr. WESSENAUER. These are based on some FPC figures for January 1952. The TVA area residential customer pays $2.50 per 100 kilowatt-hours; in New England he pays around $4.12—these are some averages—in the Northwest, it is $2.39 and in California it is $2.96.

Mr. FOGARTY. How is it that the Northwest can produce power cheaper than you can in TVA?

Mr. WESSENAUER. I think the answer to that is the Columbia River is a marvelous river.

Mr. FOGARTY. Better than the Tennessee?

Mr. WESSENAUER. Yes, it is better than the Tennessee, in the eyes of a hydroelectric engineer. It is larger; you do not have to build storage reservoirs to the same degree we do, because the snow provides a form of storage reservoir. In Tennessee, probably we had relatively more expense in creating a given reservoir, because of the development that had already taken place in the areas which the reservoirs occupy. That I think is another explanation for it——

LOCATION OF ATOMIC PLANTS IN TVA AREA AND NORTHWEST

Mr. FOGARTY. Who are the biggest users of electric power in the Tennessee Valley?

Mr. WESSENAUER. The biggest user of electric power in the Tennessee Valley is the Federal Government—the Atomic Energy Commission.

Mr. FOGARTY. The Atomic Energy Commission itself at Paducah and Oak Ridge?

Mr. WESSENAUER. Yes, sir.

Mr. FOGARTY. Is that the reason why the atomic energy plants were built in Tennessee—because of the cheap power?

Mr. WESSENAUER. That is the principal reason that has been given in a number of statements by officials of the Atomic Energy Commission—the Smyth report, etc.—that the availability of power determined the location of the plants, although of course, other factors had to be considered as well. Interestingly enough, reports to the contrary are circulated in the press every now and then.

Mr. FOGARTY. What about the places out in Washington where you have some atomic energy installations today?

Mr. WESSENAUER. Yes, sir; there is one at Hanford.

Mr. FOGARTY. Was that built there for the same reason?

Mr. WESSENAUER. I am not familiar with the background. They buy power from the Bonneville Power Administration. The atomic energy plants in the Tennessee Valley area use a great deal more power. They use a terrific amount of power for pumping gas and it is a continuous load around the clock with practically no variation at all.

ALUMINUM INDUSTRY IN THE NORTHWEST AND TVA AREA

Mr. FOGARTY. Who are the biggest users of the power produced out in that section of the country?

Mr. WESSENAUER. I imagine the biggest user of power in the Northwest would be the aluminum industry.

Mr. FOGARTY. How does the aluminum industry in the Northwest compare with what aluminum industry there is in the Tennessee Valley?

Mr. WESSENAUER. Well, for awhile, the aluminum industry in the Tennessee Valley was larger; but I believe at the present time the Northwest has a considerably larger aluminum industry than in the Tennessee Valley region.

Mr. FOGARTY. Do you know what percentage of the power produced in the Northwest goes to the chemical industry, and the aluminum industry?

Mr. WESSENAUER. I do not have those figures, sir. I can try to get them for you.

Mr. FOGARTY. Will you supply those figures for the record?

Mr. WESSENAUER. I will try to.

(The information requested follows:)

The reports of the Bonneville Power Administration for the fiscal year 1954 indicate that 41.8 percent of the kilowatt-hours it sold were delivered to the aluminum industry. The percentage of power used by the aluminum industry of the total power produced in the Northwest would be smaller. About 5.7 percent of the kilowatt-hours sold by the Bonneville Power Administration were sold to other industries, including chemical plants.

Mr. FOGARTY. In your section of the country, what part does the aluminum industry play in this entire TVA setup?

Mr. WESSENAUER. As I indicated this morning, the Aluminum Company of America has some hydroplants located on the Little Tennessee River, which supply part of the power they use at their large reduction plants and rolling mills located at Alcoa, Tenn.

In addition, the company buys a large block of power from the TVA.

There is also the Reynolds Metals Co., which has a reduction plant, rolling mill, and fabrication plant at Muscle Shoals.

Mr. FOGARTY. Do you mean that Reynolds Metals buys electricity from you people?

Mr. WESSENAUER. In the Tennessee Valley; that is right, sir.

Let me give you some figures. For example, for the last calendar year 4.1 billion kilowatt-hours went to aluminum of the total power output.

Mr. FOGARTY. Of the total of TVA?

Mr. WESSENAUER. Yes, sir.

Mr. FOGARTY. How much was produced?

Mr. WESSENAUER. Total production of the TVA system for the last calendar year was about 38 billion kilowatt-hours, and the aluminum industry used a little over 10 percent of the total.

Other large users in the valley include, for example, other metals, ferroalloys and steel, using about 1.3 billion kilowatt-hours.

Mr. FOGARTY. What is the steel producing plant?

Mr. WESSENAUER. They make alloys for steel, and they use about 1.3 billion kilowatt-hours a year.

Mr. FOGARTY. If that plant, was located in New England, how much would that 1.3 billion represent in cost?

Mr. WESSENAUER. Per kilowatt-hour?

Mr. FOGARTY. Yes.

Mr. WESSENAUER. They pay TVA about 4 mills per kilowatt-hour.

Mr. FOGARTY. What would that be, in round figures, for 1.3 billion kilowatt-hours?

Mr. WESSENAUER. Approximately $5.2 million.

Mr. FOGARTY. If that same plant were located in New England, what would they have paid in New England under the power rates which exist there at the present time?

Mr. WESSENAUER. I would imagine probably twice as much.

Mr. FOGARTY. About twice as much?

Mr. WESSENAUER. Yes, sir.

Mr. FOGARTY. The aluminum companies in the Tennessee Valley were there before you people were, were they not?

Mr. WESSENAUER. The Aluminum company's operations wer there before 1933.

Mr. FOGARTY. They had their own power-producing facilities at that time?

Mr. WESSENAUER. They had some power-producing facilities. The plant at Alcoa, Tenn., during World War II, both the alumina-reducing facilities and their fabricating facilities, were expanded, and they called upon us for large quantities of power during the war period.

Mr. FOGARTY. If it were not for TVA we would have been in pretty bad shape, would we not, during the last war as far as production of war materiel is concerned?

Mr. WESSENAUER. Certainly it is true that much of the TVA power goes into the aluminum and metals, the phosphorous and the chemical industries which we have in the valley and which are mainly primary manufacturing industries and that their production of basic materials was very important in our national defense during the last war.

The aluminum, phosphorous, and all of those industries were called upon for national defense, and I think it is accurate to say that the

aluminum produced in the Tennessee Valley had a lot to do in furnishing the necessary materials for the war effort.

Mr. FOGARTY. I know. I voted for some of those steam plants during those days on that basis, that they were necessary for national defense.

Mr. WESSENAUER. Yes, sir.

IMPORTANCE OF COAL IN POWER COSTS

Mr. FOGARTY. The largest cost in producing power is the coal, is it not? Is that the largest single factor in producing power?

Mr. WESSENAUER. The largest operating factor is the price of coal; yes, sir.

Mr. FOGARTY. The price of coal?

Mr. WESSENAUER. Yes, sir; the other large factor is, of course, the fixed charges on the capital investment. Those two are the primary elements.

Mr. FOGARTY. However, at the rate you are now going, those fixed charges are getting less and less every year; is that right?

Mr. WESSENAUER. Well, the fixed charges on the steam plants are somewhat less than the fixed charges on the hydro. Of course, the hydro has little operating expense, because no fuel is required. Fuel is an increasingly important element. As a matter of fact, our coal bill for fiscal year 1956 is estimated at about $75 million.

Mr. FOGARTY. Did I understand you to say that it takes now about eight-tenths of a pound of coal to produce 1 kilowatt-hour?

Mr. WESSENAUER. Less than eight-tenths in our newest plants.

Mr. FOGARTY. Is that true in all electric power producing installations?

Mr. WESSENAUER. No, sir; the average for the industry is about a pound per kilowatt-hour. All large new plants are designed with the possibility of low-fuel consumption in mind. The builders of most of the large ones seek to get the higher pressures and temperatures which would make that low unit coal consumption possible.

Mr. FOGARTY. That is why you were able to get that down from the other figure which you gave?

What was that figure?

Mr. WESSENAUER. One and one-third pounds was, I think, the national average less than 20 years ago, and I was just pointing out that the modern plants——

Mr. FOGARTY. Because of new equipment and new plants, that is the main reason why that figure has been brought down; is that correct?

Mr. WESSENAUER. Yes, sir.

Mr. FOGARTY. That makes it cheaper in the long run to produce power?

Mr. WESSENAUER. Yes, sir. Let me make sure I did not imply that that was a technological improvement which TVA brought about; it is one which the manufacturers of the equipment brought about.

Mr. FOGARTY. I thought that figure which you gave was significant, and I was wondering why it has decreased so much in the past few years. However, it is because of the new equipment and new facilities which have been built. You get more out of the coal than you did before?

Mr. WESSENAUER. That is exactly it.

PURCHASE OF HIGH-COST POWER

Mr. FOGARTY. I believe you made a statement at the beginning that during one of your dry seasons when you had let out some of the water from some of these reservoirs, you were short and had to buy electrical energy and you paid 10 cents per kilowatt-hour for it; is that right?

Mr. WESSENAUER. Ten mills, sir.

Mr. FOGARTY. I see. How long did that last? How long was that shortage?

Mr. WESSENAUER. Well, it came about in the fall of each of the past 3 dry years.

Mr. FOGARTY. In the last 3 years, you mean?

Mr. WESSENAUER. The last 3 years have all been exceptionally dry. Even more important than the effects of the drought, we had the very large demand of the Atomic Energy Commission. You see, the Atomic Energy Commission has been able to build its facilities and to begin using power much more rapidly than we and others could build the generating capacity with which to supply their demand. Therefore, they have become ready to take each additional block of power earlier than we could be in a position to supply it from the new plants which were being built to supply that demand. That meant that there was an excess of demand, aggravated by the drought, which meant in trying to locate power in order to meet the AEC requirements, we had to pay as much as 10 mills per kilowatt-hour for some of the power which was brought in.

Mr. FOGARTY. What do you sell it for?

Mr. WESSENAUER. Well, that cost as high as 10 mills for some of the power compares with our average sale price for power in the neighborhood of 4 mills per kilowatt-hour.

Mr. FOGARTY. That is the average; is that to the wholesalers and distributors?

Mr. WESSENAUER. Yes, sir; the average to them and to the AEC and others.

PAYMENTS IN LIEU OF STATE AND LOCAL TAXES

Mr. CANNON. Reference has been made to the question of taxation, and that is a very vital consideration, Mr. Chairman.

Let me say that you, yourself, were here, I think, at the time, and certainly I was here, when the TVA act was passed, and you will recall, Mr. Chairman, that at that time this question of taxation was one of the primary considerations, and every precaution was taken in drafting the act to see that neither the Federal Government nor the governments of the geographical units in which these facilities operated should lose anything by these projects being tax free.

So, in order to compensate the State or the county or the municipality involved, after a very careful study prior to the passage of this act, and in the discussion of it, I do not recall anything, Mr. Chairman, which received more careful, detailed, and exhaustive study than the question of compensating the units for the taxation which otherwise would be foregone.

They adopted the payments, of course, in lieu of taxes, and those payments were intended to completely compensate the various governments for the taxes which otherwise would be foregone. It was

impractical, under the circumstances, of course, to make it subject to taxation in view of the many phases of it.

The TVA payments in lieu of taxes are made under a formula adopted by the Congress, and that formula was made a part of the TVA Act.

That was contained in section 13 of the TVA Act. It was done with the concurrence and approval of the State and local taxing bodies. Everyone was consulted, and ultimately there was complete agreement on the part of all taxing authorities.

The present section 13 was adopted by the Congress in 1940 after major transfers of utility properties from private to public ownership, and extensive consideration with State and local taxing bodies, preceding the recommendations to the Congress which were adopted after committee hearings, and floor debate.

The matter was gone into very thoroughly, both in the committee and on the floor, as you will notice if you go back and read the debate at the time.

Experts in public fiscal policies were consulted, and everyone who was in a position to express an authoritative opinion on the tax phase of it was brought in. The result was the present formula, under which a minimum of 5 percent of TVA gross revenues, exclusive of revenues derived from sales to the Federal Government itself, is paid to the State and local governments in lieu of taxes.

So, when people say that this is tax free, of course, they are utterly in error, because they do pay enough to fully compensate any loss of taxes, and such payment was made under a formula which was adopted after everyone who was in a position to speak on the subject had been consulted, and had collaborated in this arrangement.

I would like to say in view of this fact, and this very careful consideration in the adoption of a formula under which the State and the municipalities and the other taxing authorities are reimbursed for the full amount to which they would be entitled, that in fiscal year 1953 TVA paid $3,418,000 in lieu of taxes to the States and counties of its service area.

That was done while the municipalities and cooperative electric systems which distribute TVA power, paid $5 million, or a total of $8,418,000.

Then, again, the cost of transmission and distribution per kilowatt-hour in the TVA area is only half the average reported for private utilities and the proportion of energy lost in transmission and distribution is 25 percent less than that reported by private utilities.

Only one-third as much per kilowatt-hour is spent for customer accounting and collecting in the TVA area. The same ratio holds for sales promotion expense, while general and administrative expense, more commonly known as overhead, is only 40 percent as great in the TVA area as with the average private company.

The $8,418,000 to which reference has just been made, the total amount paid to the State and local governments in lieu of taxes in fiscal year 1953, represented 6 percent of the consolidated revenues received by the distributors and by TVA, exclusive only of TVA's nontaxable revenue from sales to Federal agencies, which of course would not be included.

Making no allowance for the savings to local governments as a result of low electricity rates, nor the increase in other sources of

taxable wealth resulting from the regionwide application of TVA's low-cost, high-use policy, and that should be a special point: Its low-cost, high-use policy—the tax payments the region now enjoys appear to be larger than they would have been had private power companies continued to serve the people, and followed the national average in increased tax payments. That should really be the criterion, Mr. Chairman.

NET EARNINGS FOR THE FEDERAL GOVERNMENT COMPARED WITH INCOME TAXES FROM UTILITIES

Now, taking up the record here, in fiscal year 1953, TVA's net income was low due primarily to a prolonged drought which reduced the amount of power which could be produced from low-cost hydro sources, while greatly increased loads required the operation of high-cost energy sources.

The amount of net income remaining after allowance for the cost of money to the Government was about $5.1 million. All of this money belonged to the Federal Government. A private company would have paid an income tax of approximately $2.5 million on this profit.

So, you see that the Government and all the taxing units profited tremendously by the fact that we pay this money under this formula in lieu of taxes.

This is not just an instance for 1 time, or 1 year, or for 3 years, but it is a record of 20 years.

Over the full period from TVA's inception to the present, 1933 to 1953, the Government earned $235 million on the TVA power investment, after paying all operating and maintenance expenses, depreciation, and the payments in lieu of State and local taxes discussed above. These earnings represent an average annual return of 4.1 percent on the Government's average investment during this 20-year period.

During the past 20 years, the average cost of money to the Government was about 2 percent, and if that rate of interest had been charged on the power investment for the full period, it would have amounted to $115 million. The remaining $120 million is the Government's margin over and above all operating and maintenance expenses, the depreciation, payments in lieu of State and local taxes, and interest. This is 17¼ percent of all TVA's gross power revenues of $695 million for the period.

For the purpose at hand, we can compare the $120 million developed in the above calculation with the income taxes the Government might have received from a private utility with the same gross revenues in those years.

The Federal Power Commission reports the income tax payments of the Nation's private electric companies as a percent of their gross revenue from power sales. For the last 20 years, income taxes ranged from about 3 percent of gross revenue in the early 30's to 12.9 percent in 1952.

Applying the annual percentages to TVA's revenue, a typical privately owned utility would have paid Federal income taxes of about $69 million from $695 million of sales during that period.

The margin of $120 million which TVA earned, for the Government, was $51 million more than that amount.

You can see, Mr. Chairman, that any statement or any suggestion that the TVA does not pay taxes is more than met by the fact that it pays an amount in lieu, which as compared with the record in the past of any private utility payments for taxes, is greatly in favor of the Government.

I would like to ask Mr. Wessenauer if his experience and information would confirm these statements?

Mr. WESSENAUER. I believe your remarks were based upon a TVA statement, and I think our record would confirm that; yes, sir.

Mr. CANNON. There is no validity, then, in the suggestion that the Government loses a large amount of tax money here?

Mr. WESSENAUER. We believe that our earnings are sufficient, at the 4 percent, to make that comparison which you have just made.

Mr. CANNON. Thank you, Mr. Chairman.

TVA'S AREA OF OPERATIONS

Mr. PHILLIPS. May we go back, Mr. Wessenauer, to point out on the map up there on the wall the area of the TVA's operations.

Will you indicate on that map the boundary of the areas which were described and contemplated at the time the act was first passed on May 18, 1933?

Mr. WESSENAUER. In 1933?

Mr. PHILLIPS. Well, I have it here. Let me read the first paragraph from the preamble following the enactment clause of Public Law 17:

> That for the purpose of maintaining and operating the properties now owned by the United States in the vicinity of Muscle Shoals, Ala., in the interest of the national defense and for agricultural and industrial development, and to improve navigation in the Tennessee River, and to control the destructive floodwaters in the Tennessee River, and the Mississippi River Basins, there is hereby created a body corporate by the name of the "Tennessee Valley Authority."

Will you point out on that map just exactly what area is circumscribed by that description, because it seems to me that you have on your map, as I look at it, an area of distribution. Am I right, Mr. Wessenauer?

Mr. WESSENAUER. Yes, sir.

Mr. PHILLIPS. Then, will you mark on that map or indicate with your pointer on the map, please, the originally contemplated and legal Tennessee Valley area?

Mr. WESSENAUER. Well, sir——

Mr. PHILLIPS. That is, for flood control and those things which were contemplated in the act.

Mr. WESSENAUER. I think you will have to read another provision of the act in order to get the definition of the area of power distribution.

The act speaks with respect to the development of the Tennessee drainage basin. Also, in another section it talks about the distribution of power being made available within reasonable transmission distance of the projects built on the Tennessee River. Therefore, the act did not define it in metes and bounds.

Mr. PHILLIPS. The act defined it fairly carefully, as the drainage area of the Tennessee River, and of the Mississippi River Basins for flood control.

Now, in subsection (j) on page 4 of this copy of the act, it describes the various powers following the initial clause, and one of them is as follows:

(j) Shall have power to construct dams, reservoirs, powerhouses, power structures, transmission lines, navigation projects and incidental works in the Tennessee River and its tributaries, and to unite the various power installations into one or more systems by transmission lines—

and I interpolate which by reference means in the Tennessee River Basin.

Then, the only reference to steam plants is in section 7, and is as follows:

SEC. 7. In order to enable the Corporation to exercise the powers and duties vested in it by this Act——

(a) The exclusive use, possession and control of the United States Nitrate Plants Numbered 1 and 2, including steam plants, located, respectively, at Sheffield, Alabama, and Muscle Shoals, Alabama, together with all real estate and buildings connected therewith, all tools and machinery, equipment, accessories, and materials belonging thereto and all laboratories and plants used as auxiliaries thereto;

There is a further reference to steam plants, none of which contemplated steam plants, apparently, at the time other than those which had been purchased with the original purchase, because in section 10 the act says:

The Board is hereby empowered and authorized to sell the surplus power not used in its operations, and for operation of locks and other works generated by it to States, counties, municipalities, corporations, partnerships, or individuals, according to the policies hereinafter set forth.

In other words, it would be very apparent, Mr. Wessenauer, that there was a limited area contemplated by the act, and I am asking you to point it out on there.

Mr. WESSENAUER. Well, sir, there was an area of the watershed in which we were to develop the multipurpose projects, for the purpose of navigation, flood control and the production of power, but the act indicated that the distribution of the power was to be made within economical transmission distances of those projects whether within or without that area.

The first customer, for example, was Tupelo, Miss., which was outside the watershed.

Mr. PHILLIPS. You are clear in your mind that the production of power contemplated in the act was in a limited area, and that merely the distribution was permitted to the outside of that area?

Mr. WESSENAUER. The production of the hydroelectric power.

Mr. PHILLIPS. That was all you had the authority to use, those and the steam plants which you acquired in your original purchase.

Mr. WESSENAUER. If I may, Mr. Phillips, I would like to refer that question to Mr. Swidler, our General Counsel, who can point out to you the various provisions of the act which cover the points which you are raising.

Mr. PHILLIPS. Will you give me the citation on that, Mr. Swidler? Mr. Wessenauer has testified that you can go outside of this area of the Tennessee Valley in the original authorization for transmission, and I quote: "reasonable distances."

I quote the word "reasonable." How long a distance is involved.

Mr. SWIDLER. It does not quite say that. Let me read the exact language as contained in section 11.

It is hereby declared to be the policy of the Government so far as practical to distribute and sell the surplus power generated at Muscle Shoals equitably among the States, counties and municipalities within transmission distance.

Mr. PHILLIPS. Among the States. Let us stop briefly there. To sell the surplus power generated at Muscle Shoals——

Mr. SWIDLER (reading):

Equitably among the States, counties and municipalities within transmission distance.

Mr. PHILLIPS. What do you call "transmission distance"?

Mr. SWIDLER. That is a mixed engineering and economic determination, rather than a legal question.

Mr. PHILLIPS. What is "transmission distance," from Muscle Shoals, Mr. Swidler?

Mr. SWIDLER. Well, it varies with the quantity of power.

Mr. PHILLIPS. Whatever power you have at that moment in section 11 is the power generated at Muscle Shoals. So, we will say "how far outside could you carry that power?"

Mr. SWIDLER. In large quantities, I understand perhaps 200 or 250 miles.

Mr. PHILLIPS. How much power is being generated at Muscle Shoals?

Mr. WESSENAUER. It has a present hydro capacity of 430,000 kilowatts.

Mr. PHILLIPS. Now, Mr. Swidler, will you continue?

Mr. SWIDLER. Yes, sir. There is another reference to transmission distance in section 12.

Mr. PHILLIPS. That sets up your priorities.

Mr. SWIDLER. It provides for the construction of transmission lines within transmission distance from the place where generated.

Mr. RABAUT. Where are you?

Mr. SWIDLER. Page 13 of the act, the pamphlet copy which you have. The first sentence is as follows:

In order to place the Board upon a fair basis for making such contracts, and for receiving bids for the sale of such power, it is hereby expressly authorized, either by appropriations made by Congress or from funds secured from the sale of such power, or from funds secured by the sale of bonds hereafter provided for, to construct, lease, purchase or authorize the construction of transmission lines within transmission distance from the place where generated, and to interconnect with other systems.

That bond reference was to a limited issue of bonds under the old section 15.

So, there is a pretty clear recognition in the statute that the basin was not the natural line within which to dispose of the TVA power.

Mr. PHILLIPS. The act contemplated a basin or a limited area within which this power would be produced.

Let us not argue for the moment as to whether you have the authority to produce it from steam plants, which I think is a moot question, and it has been advanced by some extremely able attorneys that the act never contemplated the production from steam plants, but all of this act which you are reading has to do with two things: One, the transmission of power beyond that area, and you have given me no citation for authority to produce power from steam plants inside or outside of the area.

Mr. SWIDLER. I am taking one thing at a time, Mr. Phillips.

Mr. PHILLIPS. The second thing is that I would suggest to your argument, as is customary in a great many of these acts which we pass, that this is entirely contingent upon the appropriation of money by the Congress, and I am sure you will agree to that. There is no authority except that contingent upon the appropriation of money to implement such authority.

Mr. SWIDLER. I do not think that is exactly correct. Section 26 of our statute provides for utilization of our——

Mr. PHILLIPS. You just read me section 12 which says:

It is hereby expressly authorized, either from appropriations made by the Congress, or from funds secured from the sale of such power—

by the TVA, which in turn has been produced, you might say, from money authorized by the Congress, or appropriated by the Congress initially, but there is no other source of money for you.

Either you get it from your own sales or from Congress, and the extension of transmission lines is specifically contingent upon those two things.

Mr. SWIDLER. That would be true if that section stood alone, but in section 26, and reading the statute as a whole, it is clear that revenues are available for the construction of transmission lines, and they have been used for that purpose ever since TVA was created, without any question having been raised.

Mr. PHILLIPS. You mean your own money from the sale of power?

Mr. SWIDLER. Yes, sir.

Mr. PHILLIPS. But, that is authorized in section 12, you see.

Mr. SWIDLER. Yes; it is authorized in both sections.

Mr. PHILLIPS. It is just a repetition. However, the point I am making at the moment refers to transmission lines.

Now, point out to me where you can build a steam plant inside this basin, and then point out to me where you can go out of the basin and build a steam plant under the authorization of the act, or its amendments.

Mr. SWIDLER. A number of provisions established that, Mr. Phillips. You made reference to some of the steam-plant provisions, but not all of them.

Mr. PHILLIPS. I could not find the one which I was looking for.

Mr. SWIDLER. There is one, for example, in section 14.

Mr. PHILLIPS. It is very obvious that the section which I read referred to steam plants which we bought, and which were already in existence at Muscle Shoals. There is one broader one, and I was trying to find it.

Mr. SWIDLER. Section 14 contains one.

Mr. PHILLIPS. Suppose we take section 14, and we find that it refers to the steam plants specifically, No. 1 being Cove Creek Dam.

Mr. SWIDLER. Read the last sentence of the paragraph, sir:

In like manner, the cost and book balue of any dams, steam plants, or other similar improvements hereafter constructed and turned over to said Board for the purpose of control and management shall be ascertained and allocated.

Section 15 states:

In the construction of any future dam, steam plant, or other facility.

Mr. PHILLIPS. That is it.

Mr. RABAUT. What about that language in section 12?

Mr. PHILLIPS. I think that refers to a specific place.

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Mr. SWIDLER. Section 14 contains one.

Mr. PHILLIPS. Suppose we take section 14, and we find that it refers to the steam plants specifically, No. 1 being Cove Creek Dam.

Mr. SWIDLER. Read the last sentence of the paragraph, sir:

> In like manner, the cost and book value of any dams, steam plants, or other similar improvements hereafter constructed and turned over to said Board for the purpose of control and management shall be ascertained and allocated.

Section 15 states:

> In the construction of any future dam, steam plant, or other facility.

Mr. PHILLIPS. That is it.

Mr. RABAUT. What about that language in section 12?

Mr. PHILLIPS. I think that refers to a specific place.

Mr. RABAUT. You will find it about halfway down the paragraph.

Mr. PHILLIPS. It says to—

preserve existing distribution facilities and avoid duplication of such facilities.

Mr. RABAUT. It says—

The Board is authorized to advise and cooperate with and assist by extending credit for a period of not exceeding 5 years to States, counties, municipalities, and nonprofit organizations situated within the transmission distance.

Mr. PHILLIPS. That is right. In other words, that, again, refers to transmission lines, and you see what I mean. That is correct.

Mr. RABAUT (reading):

Existing distribution facilities and incidental works, including generating plants, interconnecting transmission lines, acquiring any interest in such facilities, incidental works, lines—

and so forth.

Mr. PHILLIPS. I think Mr. Swidler will say we have never activated that paragraph, have we? We have never loaned money to a municipality to build a generating plant; have we?

Mr. SWIDLER. No, sir; not to build generating plants. We have utilized this paragraph, however. We construe this paragraph, Mr. Phillips, as providing us authority for a period of 5 years to make loans of indefinite duration. We treat our authority to make loans under this paragraph as no longer existing, but the paragraph does serve to make clear what the Congress had in mind in the rest of the statute.

It helps to interpret other sections.

Mr. PHILLIPS. There are only two things at this point which I desire to have clarified. They have been discussed, as you well know, before this committee, for the 9 years that I have been on it, and they are:

(1) Your authority to go outside of the district to build a steam plant. Inside of the district, I am not discussing now.

(2) What limitation you legally place upon the term "reasonable distance," or whatever it is, beyond or outside of the Tennessee Valley area that you can carry a transmission line.

Mr. SWIDLER. The distance that you can transmit power is almost unlimited, if you ignore economic considerations. For purposes of the Tennessee Valley Authority Act, there is a mixed economic and engineering question, depending upon business considerations which our Board has made under the light of all the circumstances from time to time. As a practical matter, I think that there is no point in our distribution area that is much more than 100 miles from a dam, except——

Mr. PHILLIPS. Mr. Rabaut suggests that you use the pointer.

Mr. SWIDLER. The southern part of Mississippi, I think, goes down almost 150 miles, and that part does not fit what I said, and it is the only part, I think, that does not.

Aside from that, which accounts for relatively a small part of the load, the Tennessee Valley Authority Board has confined its service area within limits which are far less than any theoretical limitation that engineers might set up.

Mr. PHILLIPS. As you know, our subcommittee has found it very difficult to read into the act the right to go outside of the area to build steam plants, whatever the question might be on the inside. We find it very difficult to read into the act the right to build steam plants

inside the area, but we, of course, have been appropriating money to you, under the pressures of war need, and we have placed the Congress in the position of having actually appropriated money for steam plants inside the area without adequate authorization for doing it, but when it comes to building steam plants outside the area, there has never been any definite authority, or there has been a very real question, I will put it that way, of the authority to do that. That becomes an important question with your discussion of a plant at Fulton, or a plant at Memphis, and so forth.

In fact, it is very difficult to find any authorization, no matter what someone else might have done, for a steam plant located at Fulton.

May I call your attention to the fact that section 14 which I think you read to me, or which Mr. Rabaut read to me, as we interpret that, and someone will have to go back longer than I have been in Congress to say why that was not intended to cover further purchase of existing plants.

Let me read it carefully:

> In like manner, the cost and book value of any dams, steam plants, or other similar improvements hereafter constructed and turned over to said Board for the purpose of control and management, shall be ascertained and allocated.

Mr. SWIDLER. I think that refers to the fact that at the time the act was passed, there was uncertainty as to just how TVA would proceed with construction, and section 17 authorized the Secretary of War, or the Secretary of the Interior, to do some construction on behalf of TVA.

As a practical matter, section 17 has been a dead letter, and TVA has handled its own construction. I think that language only shows that in the drafting process the reference was in terms of the possibility that other agencies might do the construction for TVA rather than TVA doing the work itself.

Mr. PHILLIPS. It is a logical thing, I think, not knowing in 1933 what the future would hold, and they would have had something like that in it. However, now we come back to the question. Mr. Wessenauer declines, apparently, to point out what the original basin was, and certainly you cannot take in both the Mississippi River Basin and the Tennessee River Basin, and call that the original area. You have the Mississippi River in there.

Mr. SWIDLER. I do not know what you mean by the original area.

Mr. PHILLIPS. The one contemplated in the act for the production of power.

Mr. SWIDLER. That is another matter. There is only one Tennessee Valley.

Mr. PHILLIPS. How far does that go? You do not show on the map.

Mr. SWIDLER. On the western side of the area, the Valley boundary is in the middle between the Tennessee River and the Mississippi River.

Mr. PHILLIPS. I think that is an adequate answer, and that is the answer I was trying to get from Mr. Wessenauer. That is exactly where it ought to be.

Mr. SWIDLER. But the act never contemplated, in my opinion, either that the transmission lines or the service area would be confined to the boundaries of the watershed or that supplementary steam plants

would be confined to the Tennessee River, and certainly that would make no sense, would it?

If TVA had the right to transmit power to Memphis, and I do not think there could be any question about it, and if any supplementary steam power——

Mr. PHILLIPS. If it is a "reasonable distance"; assuming it is "reasonable."

Mr. SWIDLER. And any supplementary steam power that was needed could be produced, to take an example, at half the cost at this point on the Mississippi near Memphis, as compared with this point on the Tennessee [indicating], to insist that Congress intended to require TVA to build the supplementary steam facilities in the uneconomical location would be to assume an absurdity.

Mr. PHILLIPS. I do not think there is an assumption that Congress contemplated the building of steam plants at all except those which were located right on the river or near the river, but let me carry this a step farther on the basis of your own map, which I do not have in front of me:

Suppose we say, well, let us take Tulsa. I will continue a little distance west.

Suppose we say, having carried the power to Memphis, we then decide that there is a great need for power over at Tulsa, and we carry it over there. According to your theory, if the carryover of a line to Tulsa could be justified under the act, then you could build a steam plant over near Tulsa.

Mr. SWIDLER. No, sir. I hoped I made clear the distinction. The transmission area must be related not to the steam plant but to the dams on the Tennessee.

STEAM PLANTS SUPPLEMENTARY TO HYDRO

The steam plants are for the purpose of supplementary supply within the area which is within transmission distance of the dams, so that a steam plant would not serve as a point of departure from which TVA could build transmission lines farther away from the dams.

Mr. PHILLIPS. Let us ask this, then: We asked this of one of the engineers, Mr. Wessenauer and Mr. Kampmeier. Including the contemplated steam plants now what percentage of the power in the TVA area will be produced by steam plants when you finish the present construction without any more authorization?

Mr. WESSENAUER. When the present construction is completed there will be 10 million kilowatts capacity. Approximately 3¾ million of it hydro and the remaining 6¼ million steam.

Mr. PHILLIPS. Now you see where you are getting yourself on the justification argument. Steam no longer is a leveling off process, an implementing process, firming-up process. You will have 70 percent of the power created by steam.

How can you say that that is merely intended to firm up the power or supplement the power? You see what I mean?

Is 70 percent of the power rightly termed a "supplementary power"?

Mr. SWIDLER. Yes, I think so, in the light of the circumstances as they developed in our area.

At the time that this area was first established, as the distribution area for TVA power, and it has not changed much in a long, long time,

there was every reason to think that a moderate amount of steam power would be adequate to take care of the loads in that area for many years to come.

The phenomenal increase which has since occurred in that area because of 2 wars, and because of the location there of 2 of the greatest power-using facilities in the world, 2 of the 3 greatest power-using facilities in the world in all likelihood, has certainly distorted the original projections one might have had as to the proportions of steam power required.

Mr. PHILLIPS. The city of Memphis is not asking for power with the idea of handling a great industrial war development. It wants the power for domestic use. What has that to do with the industrial plants which may have gone into the area for war purposes?

You cannot include in that the industrial plants that have gone in there which have nothing to do with war.

As Mr. Fogarty questioned a moment ago regarding the power costs in New England and the power costs in the Tennessee Valley, if you can subsidize a power area, a power program in any area, you are going to have the industrial plants going into that area—power, labor, cost of power, cost of labor, climatic conditions, shipping conditions. Those are the factors which control.

I do not believe you can justify the expansion of Tennessee Valley steam plants on the grounds of a war or an emergency development, can you?

Mr. SWIDLER. Let me put it this way to you, Mr. Phillips: The AEC load alone takes a large part of our steam power. It takes more kilowatt-hours than our total hydro system would produce. When you talk about the effect of these AEC loads on steam plant construction, if we had no Memphis load, if we hadn't had a single customer before serving AEC, and if we still fully developed our hydro system—which would hardly be the way to develop power for the AEC loads—we still would need a lot of steam.

Mr. PHILLIPS. All right. But you do not need two-thirds of your power created by steam in order to take care of AEC?

Mr. SWIDLER. No, but there would be much less need if it were not for AEC.

Mr. PHILLIPS. And when you talk about building an additional plant at Fulton to take care largely of Memphis, you are not talking about taking care of AEC.

Mr. SWIDLER. The relationship between steam and hydro power is more of an engineering than a legal question. I had better ask Mr. Wessenauer to answer that one.

Mr. WESSENAUER. I would anser that question this way, Mr. Phillips: A large part of TVA's steam capacity was designed and planned and authorized by the Congress as a national defense requirement, and you have in the neighborhood of 3½ million kilowatts of TVA steam power authorized for that purpose, with less than 3 million kilowatts of TVA steam power for all other purposes.

Now of the remaining power requirements on the system, large quantities of round-the-clock power, like that required for AEC, is needed for the industries like aluminum and chemicals. They too are closely related to the national defense. When you add those to steam power for AEC, you find we do not have as much steam for the firming up of the hydro as the system should have.

Mr. PHILLIPS. That is a matter of opinion. What we are trying to get are facts. The basic one was the legal authority to build a steam plant outside of the area contemplated in the original act.

I am not sure that you have given me a clear definition.

Mr. SWIDLER. I had not quite finished, Mr. Phillips.

Mr. PHILLIPS. All right.

TVA STEAM PLANTS OUTSIDE THE TENNESSEE WATERSHED

Mr. SWIDLER. Your reference to Fulton indicates that you may be under the impression that Fulton is the first steam plant which TVA has proposed which is outside of the Tennessee Valley drainage area.

Mr. VOGEL. Trace that area.

Mr. SWIDLER. All right, sir [indicates area with pointer].

Just above this area is the Cumberland drainage area.

Mr. PHILLIPS. It would be helpful to have that traced because that has been a question before the committee each year. I think this year Mr. Wessenauer will admit that in this map he has spread out a little farther to the west than in any previous year. Am I right?

Mr. WESSENAUER. We have shown the entire power service area on the map. I believe this may be the first time we have done it.

Mr. PHILLIPS. That is confusing.

Mr. WESSENAUER. The point Mr. Swidler was making is that both the Shawnee and Gallatin plants are outside the drainage basin of the Tennessee Valley.

Mr. SWIDLER. One is on the Ohio River and the other on the Cumberland River.

Mr. PHILLIPS. In section 17, that section does refer to a specific place, the Cove Creek Dam, the hydro on the Cove Creek Dam.

Mr. SWIDLER. That is right.

Mr. PHILLIPS. We cannot take that as a general authority to go outside the area to build a steam plant.

Mr. SWIDLER. I wasn't citing it for that purpose. I cited it to explain the reference to dams constructed and turned over to TVA.

Mr. PHILLIPS. You still have a question as to whether those were justified or not justified; were they really authorized by the Congress under the pressures of war. The building of those plants and the appropriation of money, without raising the legal question, under war premises, does not justify building a plant down at Fulton under the conditions which surround the situation there now. In Mr. Wessenauer's testimony just now he states that at least a third of the power, talking about the 10 million-plus kilowatts, a third of that is not hydro and it is not contemplated to firm up or to be used for war or emergency installations.

It is a severe thing to ask us to accept a third of the power as firming-up power. That is necessarily, then, being used, or at least part of it is being used, for purposes which have nothing to do with war, nothing to do with firming-up the power. It is very difficult, indeed, to relate that to a new argument in justifying a steam plant down at Fulton.

Mr. SWIDLER. It seems to me, putting the legal question aside, it is much easier for Congress to justify a plant at the most economical location that in an uneconomical location.

If the TVA Board should come in here and say that in order to supply our loads we want to put a plant at a point where it would

waste a lot of Government money, I don't think you gentlemen would be very enthusiastic about it.

Mr. PHILLIPS. I think the assumption would be that TVA should not put any plant at either place. I didn't intend to ignore the legal point. I am trying to get a citation from you as to the authority for putting a plant completely outside the area, at the projected place, Fulton.

Mr. SWIDLER. That is a point which has been raised in litigation. Last year Mr. Jonas raised the question. I know there are some lawyers who take an opposite viewpoint on it.

I cited him a case last year. Since that time——

Mr. PHILLIPS. Was that in the record last year?

Mr. SWIDLER. Yes, it was.

Mr. RABAUT. I note here that the Shawnee steam plant in 1954 received $22,670,998 and they are scheduled in 1955 for $23,496,000 more, and Gallatin steam plant is authorized $17 million plus in 1954 and $28 million for 1955.

These were done by the committee which had this before.

Mr. PHILLIPS. That is correct.

Mr. RABAUT. Both are outside the boundary of the watershed.

Mr. PHILLIPS. That is correct.

Mr. RABAUT. It seems if it was done at that time it might be advocated that it was done because of the pressure of hostilities and things of that type, but, on the other hand, when we realize, in the same breath, that we are using now all of the power except the steam power for atomic energy——

Mr. PHILLIPS. We are not. That is the point. We will say we use all the hydro power, and we are using half of the steam power, which leaves us still three and a half million kilowatts.

Mr. RABAUT. The point I make is that we are using all of it. If we don't want to augment this with a further steam plant if it seems necessary under the advice of those running the place, then are we going to expose ourselves to depending upon private industry, for instance, for this very necessity of the Government? That is the point I am trying to make. I think that is the argument.

Mr. PHILLIPS. That is the argument, because you insert in there, Mr. Rabaut, a question of the necessity of the Government. Actually there is no necessity of the Government involved in this.

Mr. RABAUT. You see, this is so related to our new source of power.

(Discussion off the record.)

Mr. PHILLIPS. Do you want to go into the citation? Some day I suspect we should give authority to somebody to stop this argument by carrying it to the Supreme Court, to test the case, because I don't know how else we will stop the argument.

Mr. SWIDLER. I have here an opinion of a three-judge Federal court recently handed down in the case of Rainbow Realty Co. against Tennessee Valley Authority.

Mr. PHILLIPS. Wasn't that the one we used last year?

Mr. SWIDLER. No, sir.

Mr. PHILLIPS. This is a new one?

Mr. SWIDLER. Yes, sir.

Mr. RABAUT. Let us hear it.

Mr. SWIDLER. It was decided only last August.

Mr. PHILLIPS. Will you identify the court?

Mr. SWIDLER. Three-judge district court, Middle District of Tennessee.

Mr. PHILLIPS. Is it concluded or on appeal?

Mr. SWIDLER. The case has been finally concluded. It was first heard on the constitutional question, and went back to the district court for hearing on the question of the value of the property.

Mr. PHILLIPS. How did it get back?

Mr. SWIDLER. There were really two cases, one a condemnation action by TVA, and the other to enjoin TVA from condemning. This is the injunction case.

Mr. PHILLIPS. All right.

Mr. SWIDLER. The injunction was denied, and the injunction case was dismissed.

Mr. PHILLIPS. On grounds of lack of constitutionality?

Mr. SWIDLER. On the ground among others that the plaintiff failed to make a case on constitutional grounds. Gallatin steam plant was one of the steam plants involved in the case. The condemnation action has been settled by agreement.

The case is reported in 124 Federal Supplement, page 436.

Mr. RABAUT. Do you want that in the record?

Mr. SWIDLER. It relates to the issue we are talking about.

Mr. RABAUT. Without objection let us insert this in the record.

(The document referred to is as follows:)

UNITED STATES DISTRICT COURT, MIDDLE DISTRICT OF TENNESSEE, NASHVILLE DIVISION

No. 1851—CIVIL

RAINBOW REALTY COMPANY, PLAINTIFF, v. TENNESSEE VALLEY AUTHORITY, DEFENDANT

Before Martin, circuit judge; Darr and Davies, district judges.

Per curiam. In cause No. 1874, the United States, upon relation of and for the use of the Tennessee Valley Authority, filed on May 24, 1954, a petition for taking, by right of eminent domain, certain described lands in Davidson County, Tenn., owned in fee simple by the Rainbow Realty Co., a corporation. The purpose of the pleading was to condemn an easement and right-of-way for the use of TVA in constructing and maintaining electric power transmission lines. The authority for the taking was declared to be found in the Tennessee Valley Authority Act of 1933, 48 Stat. 58, as amended, 16 U. S. C. A., section 831, et seq. (1946).

On the following day, the United States district judge, pursuant to appropriate authority vested in the court, signed an order directing that the Tennessee Valley Authority, as agent of the United States, be put into immediate possession of the property sought to be condemned, to the extent necessary to permit the TVA to carry out its proposed operations. This order was set aside on June 2, 1954, on motion of the Rainbow Realty Co., on the ground that the order had been entered without notice to the realty company and prior to its filing of an answer challenging the legal right of TVA to condemn the land described.

On June 14, 1954, the plaintiff filed a motion to reinstate the order of possession and, simultaneously, filed objections to certain interrogatories propounded by the defendant landowner. Supporting affidavits were filed by the Government. At the same time, the plaintiff also filed motions to strike portions of the answer, and, on July 1, 1954, filed objection to supplemental interrogatories propounded by the defendant Rainbow Realty Co.

On April 22, 1954, Rainbow Realty Co. had filed in this court a complaint in this action, No. 1851, entitled *Rainbow Realty Company* v. *Tennessee Valley Authority*, wherein declaratory judgment and injunctive relief were sought against the institution of condemnation proceedings to take any part of the land of the plaintiff for the proposed transmission lines. The landowner's complaint prayed for a permanent injunction but did not contain a prayer for a temporary injunction or restraining order, nor did plaintiff otherwise apply for such relief.

In cause No. 1874 (the condemnation proceedings), Rainbow Realty Co., in its answer, raised essentially the same issues of lack of constitutional or statutory

authority for the taking, for the use of TVA, of its land as it presents in the instant case.

Inasmuch as the Rainbow Realty Co., in this case (No. 1851), seeks an injunction against condemnation proceedings for the taking of any of its land for the proposed transmission lines upon the ground—among others—that if the Tennessee Valley Authority is authorized by law to take by eminent domain any of its land for the proposed transmission lines the law under which it acts is unconstitutional and void to the extent that such taking is authorized, the district judge for the Middle District of Tennessee properly caused to be constituted a 3-judge court, as required by law; and such court has assembled and has heard attorneys for the respective parties argue the case orally and has considered both the original and the supplemental briefs and the pleadings and record in the cause.

The TVA filed a motion to dismiss the original complaint; and, on June 28, 1954, Rainbow Realty Co. filed an amended complaint. On July 1, 1954, the Tennessee Valley Authority filed a motion to dismiss the amended complaint and a motion to strike material portions of it. On the same date, it also filed objections to supplemental interrogatories served upon it by the plaintiff, Rainbow Realty Co.

It appears from the complaint that the land to be taken by eminent domain is to be used for the purpose of constructing transmission lines for carrying electric power to Nashville; defendant TVA having for many years transmitted electric power to Nashville Electric Service (a public corporation organized and existing under the laws of Tennessee). This public corporation has distributed power so received to residents of Nashville and its suburbs. Boiled down, the main complaint of the plaintiff realty company is that the power system of TVA, which was in the beginning predominantly hydroelectric, is being converted through construction of many steam-generating plants to a predominantly "steam power" system, and that TVA lacks statutory or constitutional authority for the construction and operation of such a system or for the construction of transmission lines for marketing the output of such system.

The Rainbow Realty Co. contends further that the construction of transmission lines across its property would be violative of zoning restrictions set up by the Davidson County Court pursuant to chapter 473 of the Private Acts of Tennessee, 1939, as amended. The company adds the contention that it has no adequate remedy in the condemnation proceeding, for the reason that title and the right to possession may pass to the condemnor "with no right of appeal prior to final judgment as to the amount of compensation to which the landowner would be entitled if the taking were lawful."

As more elaborately stated by the Rainbow Realty Co. in its brief, the TVA was not granted authority "to go into the power business as such or to generate power by steam merely because TVA might have insufficient hydro power to supply the entire requirements of the territory which TVA appropriated, including the requirements of industrial customers."

Rainbow says that "if the Tennessee Valley Authority Act, as amended, be construed to authorize TVA to go into the power business as such, and to generate steam power (other than as incidental to the production and sale of hydro power) said act is unconstitutional and void." Further contention is made that "when TVA's generating capacity became insufficient to enable TVA to supply all the requirements of the territory in which it was operating with surplus hydro power, the solution was (and is) for TVA to cut off customers other than preference customers and if this did not solve the problem, to withdraw into a territory which it can legally and adequately serve." We deem it unnecessary to state other points made by plaintiff, for the reason that they would seem to be merely expansions of arguments which have been summarized.

We think that the major contentions of the Rainbow Realty Co. have long been rejected by the highest court. We therefore deem it unnecessary to go into an elaborate restatement of settled law, but consider it sufficient to cite the Supreme Court decisions—with occasional quotation therefrom—which demonstrate the broad powers that have been vested in the Tennessee Valley Authority by acts of Congress. In our judgment, these authorities, considered together, reject every argument adduced by plaintiff in the instant controversy.

As is well known, TVA was created in 1933, 48 Stat. 58, 16 U. S. C. A., section 831, et seq. The broad powers vested in the Tennessee Valley Authority by the act were pointed out by the Supreme Court in *United States, ex rel Tennessee Valley Authority* v. *Welch* (327 U. S. 546, 553). There, the Supreme Court asserted that the common law rule requiring a strict construction of powers to condemn was not applicable because of the specific provision contained in section 31 that the act shall be "liberally construed to carry out the purposes of Congress

to provide * * * for the national defense, improve navigation, control destructive floods, and promote commerce and the general welfare." It was held further that, in construing the act, the court should not break one inseparable transaction into separate units but should view the entire transaction as a single integrated effort on the part of TVA to perform its functions. The Supreme Court said: "The broad responsibilities placed on the Authority relate to navigability, flood control, reforestration, marginal lands, and agricultural and industrial development of the whole Tennessee Valley. The TVA was empowered to make contracts, purchase and sell property deemed necessary or convenient in the transaction of its business, and to build dams, reservoirs, transmission lines, powerhouses and other structures. * * * To discharge its responsibilities the TVA was granted 'such powers as may be necessary or appropriate' for their exercise. Section 4 (h) of the act gives the TVA the very broad power to 'exercise the right of eminent domain * * *.' Section 4 (i) of the act empowers the Authority to condemn certain specified types of property and concludes by referring to "all property that it [the Authority] deems necessary for carrying out the purposes of this act * * *." To make clear beyond any doubt the TVA's broad power, Congress in section 25 authorized the Authority to file proceedings, such as the ones before us, 'for the acquisition by condemnation of any lands, easements, or rights-of-way which, in the opinion of the Corporation, are necessary to carry out the provisions of this act.' All these provisions show a clear congressional purpose to grant the Authority all the power needed to acquire lands by purchase or by condemnation which it deems necessary for carrying out the act's purpose."

As was stated in *United States, ex rel. Tennessee Valley Authority*, v. *Purpose* (105 F. Supp. 534, 535 (W. D., Ky.)), by the writer of this per curiam when sitting by designation in the United States District Court for the Western District of Kentucky: "It appears that the purpose of these actions is to acquire easements and rights-of-way for a portion of the transmission line to run, when completed, from Kentucky Dam to Shawnee steam plant. It would seem that numerous sections of the Tennessee Valley Authority Act, considered together, make it clear beyond cavil that TVA has the essential authority to acquire the easements and rights-of-way in question. See sections 4 (f), (g), (i), (j); section 10, section 11, section 12, section 12a, section 14, section 15, section 22, section 25, and section 31. Section 12 of the act (48 Stat. 58, 1933, as amended, title 16, sec. 831, et seq.), expressly authorizes the construction of transmission lines 'within transmission distance from the place where generated,' and to interconnect with other systems. There is undoubtedly statutory authority in the TVA Act, granted in section 4, for the construction of the Shawnee steam plant. The mere reading of the statute is convincing as to this. See also sections 14 and 15 of the act." The Welch case (327 U. S. 546, supra), was cited as authority; and it was asserted by the writer that the condemnation of easements which TVA considered necessary for the construction of transmission lines is authorized by the express provisions of the act cited in the opinion. The same conclusion is drawn in the circumstances of the case at bar.

Appropriation acts of Congress have provided funds for eight major steam plants now constructed or in process of construction by TVA: (54 Stat. 781), covering Watts Bar steam plant; (53 Stat. 76, 80), covering Johnsonville; (64 Stat. 37-38), covering Widows Creek; (64 Stat. 1223, 1229), covering Kingston and Shawnee steam plants; (65 Stat. 268, 280), covering Colbert; and (66 Stat. 637, 645), covering the Gallatin and John Sevier steam plants. These repeated congressional appropriations indicate clearly the interpretation by Congress of the TVA Act to authorize construction of steam plants. Reasoning by analogy, this principle would seem to have been recognized by the United States Court of Appeals of this circuit in *Tennessee Valley Authority* v. *Kinzer* (142 F. (2d) 833, 837 (C. A. 6)).

There can now be no doubt that there is plainly both constitutional and statutory authority for the acquisition by TVA, by eminent domain, of easements and rights-of-way for the erection of transmission lines to carry hydroelectric power. As has been shown, the Congress has lawfully appropriated money for the construction of standby or firming-up steam plants as auxiliary to hydroelectric TVA plants. Transmission lines serving Nashville, Tenn., which will include the line to be erected across the property of the Rainbow Realty Co., are part of a single integrated system of transmission connecting all the hydroelectric power plants of TVA together with its steam plants and points of intersection with other utility systems. All these lines, including those over the property of plaintiff, will transmit some hydroelectric energy. We think it clear under principles enunciated in a connected series of Supreme Court opinions that the construction of these transmission lines cannot be held unconstitutional merely because such lines carry steam-generated electricity in addition to hydroelectric power. Nor is the

relative percentage of the source of the power a relevant issue necessary to be determined by this court to reach decision.

At this late date, we find no occasion to restate long understood principles derived from the following cited opinions of the Supreme Court of the United States which reject many arguments of the plaintiff in the case at bar. For decisions directly upholding the constitutionality of the Tennessee Valley Authority Act, *see Tennessee Electric Power Co.* v. *Tennessee Valley Authority* (306 U. S. 118), affirming judgment of a three-judge court (Allen, circuit judge; Gore and Martin, district judges) reported in (21 F. Supp. 947 (E. D., Tenn.) See also *Ashwander* v. *Tennessee Valley Authority* (297 U. S. 288). Compare *Oklahoma* v. *Atkinson Co.* (313 U. S. 508); *United States* v. *Appalachian Power Co.* (311 U. S. 377). These cases establish the proposition that the interstate commerce clause of the Federal Constitution (article I, section 8, clause 3) authorizes the development of integrated watershed programs. It, therefore, seems unnecessary in this case to advert to the effect of the war powers under the Constitution, the property clause, or the general welfare clause.

As previously indicated, the transmission line sought to be constructed across plaintiff's property by right of eminent domain will aid in the supplying by TVA of electric current to the city of Nashville. Congress, in 1939, gave express sanction to the arrangement between the Tennessee Valley Authority and Nashville. An elaborate network of transmission lines and related facilities have been acquired or constructed to serve Nashville, which city, relying upon the availability of the TVA service, has invested substantially in equipment and distribution lines to receive power from the TVA system. Inasmuch as the undertaking of the Tennessee Valley Authority to serve Nashville in this respect is a valid undertaking, such transmission facilities may be set up or acquired by TVA as may be needed to effectuate the arrangement, irrespective of whether the source of supply is exclusively waterpower, or waterpower and steam-plant power from an integrated system. This rests upon the long established doctrine of *McCulloch* v. *Maryland* (4 Wheat. 316, 421): "Let the end be legitimate, let it be within the scope of the constitution, and all means which are appropriate, which are plainly adapted to that end, which are not prohibited, but consist with the letter and spirit of the Constitution, are constitutional."

While it is true that we have presented to us a justifiable controversy, the extent to which electric power from steam plants commingled with power from hydroelectric plants may be supplied by TVA is a question for legislative determination and not for determination by the courts.

We are of the opinion that chapter 473 of the Private Acts of Tennessee for 1939, authorizing the Davidson County Court to establish zoning regulations, is ineffective to limit the exercise of the right of eminent domain by the Federal Government or any of its constituted agencies, such as the Tennessee Valley Authority, which have been vested lawfully with the power of eminent domain. Nearly 79 years ago, the Supreme Court of the United States declared that if the United States has the power to condemn private property for public use, such power is complete in itself; that it can be neither enlarged nor diminished by a State; that no State may prescribe the manner in which the power must be exercised; nor can the consent of a State ever be a condition precedent to the enjoyment by the United States of its right to condemn. *Kohl* v. *United States* (91 U. S. 367, 374). See also *United States* v. *Carmack* (329 U. S. 230); *Oklahoma* v. *Atkinson Co.* (313 U. S. 508). Numerous other cases to the same effect could be cited.

For the foregoing reasons, we think the plaintiff is entitled to no injunctive or other relief. Therefore, the motion of the defendant, Tennessee Valley Authority, to dismiss the amended complaint is granted. This ruling makes it unnecessary for rulings to be made upon the motion to strike certain portions of the complaint, or upon the objections of TVA to the supplemental interrogatories served upon it by the plaintiff.

JOHN D. MARTIN,
United States Circuit Judge.
LESLIE R. DARR,
United States District Judge.
ELMER D. DAVIES,
United States District Judge.

Attest: A true copy.
[SEAL]

L. B. ORMES,
Clerk, U. S. District Court,
Middle District of Tennessee.
By S. E. WASSON, *D. C.*

(Decided August 2, 1954)

Mr. VOGEL. The point has been made that the hydropower is enough to take care of the Atomic Energy Commission. The implication is that that is going to the Atomic Energy Commission and that there is a margin over and above that necessary for supply to the Atomic Energy Commission.

Mr. PHILLIPS. It all goes into a common grid.

Mr. VOGEL. That is true; but I would like to point out the advantageous price of the power derived from hydro sources primarily goes to the original contract users and we are presently purchasing high price power on an interim basis for AEC, so it is not divided just the way it would be indicated.

POWER PURCHASED FROM OTHER SYSTEMS

Mr. PHILLIPS. Last year you said you purchased about 14 percent of your power outside. How much have you purchased in the intervening year? Last year you testified it was 14 percent. How much are you now buying from private utilities?

Mr. WESSENAUER. At the present moment not very much.

Mr. VOGEL. We have a good water condition now.

Mr. PHILLIPS. What is not very much? We deal in figures and not generalities.

Mr. WESSENAUER. It is practically zero, sir. I will supply some figures.

Mr. PHILLIPS. Last year it was 14 percent, am I right?

Mr. WESSENAUER. I will check the figure.

Mr. RABAUT. Insert it in the record.

(The information requested is as follows:)

Portion of system power obtained from other power systems

Fiscal year:	Percent
1953	9.8
1954	8.1
1955 (estimated)	4.2
1956	0
April 1955	.003

Mr. PHILLIPS. Do you do it by calendar or fiscal year?

Mr. WESSENAUER. Generally fiscal, sir.

Mr. PHILLIPS. Give us the last 2 years and what you contemplate for next year if you know.

AREAS OF OPERATION

Now back to the citation.

Mr. SWIDLER. The two principal statutory references are sections 4 (i) and 4 (j), both of which you referred to.

I would like to read them.

Section 4 (i) provides that TVA—

shall have power to acquire real estate for the construction of dams, reservoirs, transmission lines, powerhouses, and other structures, and navigation projects at any point along the Tennessee River——

Mr. PHILLIPS. That is on the Tennessee River?

Mr. SWIDLER. No, sir. Navigation projects are limited to the Tennessee River. There is no limitation on the location of the other.

Mr. PHILLIPS. That is the first time that has been presented to us. The first part of that sentence has no reference to the Tennessee River. You are contending now that the phrase beginning "and navigation projects at any point on the Tennessee River" is self-confining, that the first part of the paragraph that they shall have the power to acquire real estate, dams, reservoirs, transmission lines, powerhouses, and other structures has no geographic limitation?

Mr. SWIDLER. Not in this section. That is my point.

Mr. PHILLIPS. Go ahead.

Mr. SWIDLER. That interpretation becomes clear from the inclusion of the words "transmission lines" in this enumeration of items which may be constructed by TVA. If the limitation were to the Tennessee River Basin, then TVA would have no authority to build transmission lines outside of the Tennessee River Basin.

Mr. PHILLIPS. You said you had another portion there.

Mr. SWIDLER. Construing the language strictly, it doesn't even say "Tennessee River Basin." It says "Tennessee River."

Mr. PHILLIPS. That is correct.

Mr. SWIDLER. And clearly "transmission lines" weren't to be limited to the Tennessee River, so that the reference to the Tennessee River must clearly be limited, to make sense, to the navigation projects.

Mr. PHILLIPS. Read that in conjunction with "(j)", following the semicolon on the fourth line of page 5, and—

> shall have the power to acquire and construct powerhouses, power structures, transmission lines, navigation projects, and incidental works in the Tennessee River and its tributaries——

Mr. SWIDLER. That is right. In my opinion the incidental works refer to the navigation projects. They couldn't refer to the transmission lines.

Mr. PHILLIPS. I have a feeling, as I said, that eventually we would do ourselves a favor if we would permit this case to be taken to the Supreme Court. This interpretation is new to me. Certainly when you translate "incidental works in the Tennessee River and its tributaries" as meaning only navigation projects, I find it difficult to accept that on page 5, although I might have to study carefully your interpretation of page 4.

Mr. SWIDLER. The punctuation is a little clearer in paragraph 4 (i).

Mr. PHILLIPS. The interpretation on page 5 comes only by implication from the interpretation on page 4.

Mr. SWIDLER. And from the sense.

Mr. PHILLIPS. Thank you very much.

Mr. JENSEN. The purpose of the TVA Act was mainly for flood control and navigation, power being incidental to the main purpose for the building of TVA.

Mr. PHILLIPS. Power wasn't even mentioned.

Mr. JENSEN. I realize it was not. That was the assumption.

Now, then, from what I have just heard here you would gather that flood control and navigation were incidental to power when it is just the opposite.

Mr. PHILLIPS. Were you here this morning when the chairman said, "What we are interested in is power"?

Mr. JENSEN. Sure I was here. I wish he were here now, because if we are going to follow the purpose of the act and do our duty as

representatives of the people, we must absolutely follow the intent of the law.

We are certainly not primarily interested in power because the law that created the TVA Act says that the project is for the purpose of flood control and navigation.

All we hear so far is the fact that they are trying to put this whole project on the premise that we have to take power as the first essential.

We are getting a long way off base, as I see it, gentlemen.

Mr. RABAUT. Any other questions?

Mr. PHILLIPS. This is a good stopping place.

Mr. RABAUT. We will adjourn now until 10 o'clock tomorrow morning.

TUESDAY, MAY 24, 1955.

Mr. RABAUT. The committee will come to order.

At the time of our recess yesterday afternoon, Mr. Phillips was conducting his examination of the witnesses.

Mr. Phillips, you may proceed with your interrogation.

Mr. PHILLIPS. Mr. Chairman, I had, I think, concluded yesterday afternoon the questions about the legal authority of the Tennessee Valley Authority to engage in both the transmission and the generation of power outside of the original territory, but I wanted to ask General Vogel a general question:

General Vogel, you heard this discussion all day yesterday.

General VOGEL. Yes, sir.

Mr. PHILLIPS. We had a discussion at some length, and you heard the statement made that what TVA was interested in was power.

OBJECTIVES OF TVA

You have read the act pretty thoroughly, and I did not know whether you want to be given the opportunity to make any statement as to the objectives of the TVA, both originally and at the present time.

General VOGEL. Well, I think, sir, that I covered that in some detail in my opening statement where I pointed out that the act known as the Tennessee Valley Act, was devised primarily for the improvement of navigation on the Tennessee River, and to control the destructive floodwaters in the Tennessee River, and the Mississippi River Basins.

In addition to that, of course, there were provisions in the act for the manufacture and development of fertilizers at Wilson Dam, and also for the incidental production of power.

Now, that is referred to specifically in the act in section 10, where it is stated that the Board is hereby empowered and authorized to sell the surplus power not used in its operations, and for operation of locks and other works, generated by it, to States, counties, municipalities, corporations, partnerships, or industries, according to the policies herein set forth.

Then, there are provisions whereby the Board is authorized to enter into contracts for the sale of that power.

Does that answer your question, sir?

Mr. PHILLIPS. Yes; I think it does, because you have mentioned both the words which have been mentioned so many times in this

room before the subcommittees which previously considered the appropriation. Those words are "incidental" and "surplus."

There is one point which I would like some information on regarding flood control.

One of the basic reasons for creating the Tennessee Valley Authority was for flood-control purposes.

This has never been explored completely, I believe, in this committee before, but if I remember the figure correctly, something like 464,000 acres of land have been put under water in the Tennessee Valley in the flood-control project.

General VOGEL. Mr. Phillips, I would have to refer to the exact statistics on that, sir.

Mr. PHILLIPS. Does anyone know offhand what the figure would be? It would be at least, I think, the figure which I have in my mind, and which is entirely from memory, 464,000 acres. My point is that the same testimony indicated that about 70 percent, or about 325,000 acres, would have been the maximum number of acres under water on the basis of the lifetime history of the river by flooding. In other words, we have put under water approximately some 464,000 acres in order to save 325,000 acres.

What is wrong with the figures, or what is wrong with our philosophy?

General VOGEL. Well, I do not know what is wrong with the figures, if anything, sir. I would have to refer to the data on that.

The philosophy, I think, is that in accomplishing flood control, we have also, in the Tennessee Valley, accomplished a number of other things.

The principal purpose of the act, being as I have indicated, to develop navigation on the river, and as a result of the damming of the river, there has been created an 11-foot channel from Paducah for approximately 650 miles to the vicinity of Nashville.

So, that there has been more gained than merely flood control.

The other residual benefits, of course, have been also mentioned during the hearing just previously.

Mr. PHILLIPS. However, the residual benefits must be important enough to justify the elimination of the difference between 325,000 acres and 464,000 acres, which is 135,000 acres of good agricultural land, and I think the residual benefit must be more than recreation and such.

General VOGEL. Well, of course, recreational benefits are not figured here in the computation, nor are benefits to fish and wildlife. I might point out, however, that as a result of developing the lakes of the river, there have been very definite benefits in the nature of assured water supply for industry and, of course, for the lakeshore properties, and the farming lands adjacent have become more valuable.

SALE OF POWER TO INDUSTRY

Mr. PHILLIPS. When you mention industry, you bring me to my next question, and I think this is a direct quotation from Mr. Wessenauer, and I think, Mr. Wessenauer, you will recognize it:

The TVA does not retail power.

Then, you spoke of 150 members in the system, and you also used the word "partnership."

I am under the impression very clearly that you sell direct to industries.

Mr. WESSENAUER. To the large power-using industries; yes, sir; that is true.

Mr. PHILLIPS. What is that but retailing, and what percentage is involved?

General VOGEL. It depends upon what you call it, sir.

Mr. PHILLIPS. What percentage of your power goes direct to industrial plants and not through a community or through an REA or any distribution system other than your own?

General VOGEL. Mr. Wessenauer can answer that more properly.

Mr. PHILLIPS. What is the figure on that, Mr. Wessenauer.

Mr. WESSENAUER. In fiscal year 1954, we supplied approximately 16 percent directly to a few large industries; in other words, they take power in large, wholesale blocks.

Mr. PHILLIPS. Why do you not consider that retailing power?

General VOGEL. If you consider retailing as a sale direct to the consumer, of course it is, but it is sold in such blocks that really the power is in wholesale quantities as sold.

(Discussion off the record.)

Mr. RABAUT. What was the wholesale price?

Mr. WESSENAUER. Perhaps I can explain it. I did not mean to leave the impression, sir, that we did not serve some industries directly. I was trying in my statement yesterday to point out that the bulk of the homes, farms, and industries of the region are served through these local distribution agencies. I may have been in error in not making this distinction yesterday.

We do sell power to about a score of these large industrial concerns, at prices that compare with the prices which the local distribution agencies sell to industry.

Mr. PHILLIPS. When you use the word "compare," you mean they are higher, but not at prices which the retail agency resells their power to the individual consumer?

Mr. WESSENAUER. Yes; We use the same rate schedule for sales to these large industries that the retailer would in selling to its customers.

SALES OF POWER TO PUBLIC AGENCIES

Mr. PHILLIPS. We now come to the word "partnership." This brings us back, Mr. Wessenauer, and the general was not here, but General, I call your attention to the argument which was extended, about 2 years ago, to what you call a partnership.

When the TVA sells its electric current to a community, it requires from the community a contract that it will buy no power from anyone else. It further requires a contract, and insists in the contract that the community will sell the power to the ultimate consumer at a price fixed by the TVA.

Do you call that a partnership?

General VOGEL. Well, in my opinion it is not a partnership, although that word is frequently a little loosely used.

Mr. PHILLIPS. I would call it the most definite monopoly that I know of today, outside of a dictatorship.

What would you call it?

General VOGEL. Well, I would call it a relationship existing as between a wholesaler and retailer of power under circumstances which have been laid down by law and by the purveyors.

Mr. PHILLIPS. As the record will show, several years ago members of this subcommittee pointed out that, during the depression years, there were, and still are, many smaller communities in parts of Arkansas and Missouri, and other parts of the United States, which sell the power which they purchase from such agencies as the Southwestern Power Administration at a slight profit, and in that way they support their communities, and set aside money for schools or recreation, and in the depression years many of the small communities carried themselves—the communities in areas where there were tax limitations in the law—by selling the power, and it has never been clear to me why the TVA thinks it has the right to establish so firm a monopoly that it can control the price at which the power is retailed.

Could you explain that?

General VOGEL. I believe that is referred to in the law. I believe there is a provision in the act, but I might have a little difficulty finding it quickly.

Mr. SWIDLER. It is contained in the third proviso in section 10.

Mr. PHILLIPS. Let us ask the attorney if it is correct to call it a provision?

Would you not call it an interpretation?

Mr. SWIDLER. It is a rather clear provision, Mr. Phillips, and I will read it to you.

Mr. PHILLIPS. It is contained in section 10?

Mr. SWIDLER. It is contained in the third proviso of section 10, and reads as follows:

Provided further, That the Board is authorized to include in any contract for the sale of power such terms and conditions, including resale rate schedules, and to provide for such rules and regulations as in its judgment may be necessary or desirable for carrying out the purposes of this Act * * *.

Mr. PHILLIPS. I think I am mistaken in calling it an interpretation, but I will call your attention to the fact that it is not a mandatory provision.

General VOGEL. I think that is correct, sir.

Mr. PHILLIPS. Well, it has troubled me ever since I have been hearing this budget.

I would think it would trouble the communities of Tennessee. I think the record will show that before you arrived, General, TVA had to sue one of the communities in order to keep it in line.

Am I right?

General VOGEL. Yes, sir; I believe you are.

Mr. PHILLIPS. That, still, you think, is a partnership?

General VOGEL. Well, again, you are using that word loosely.

Mr. PHILLIPS. Loosely; yes.

General VOGEL. I have not entirely subscribed to it.

Mr. PHILLIPS. I accept that word "loosely," as a definition, but "partnership" is not my word. I am quoting it.

PAYMENTS BY TVA FROM POWER REVENUES

General, do you know any reason why the TVA should—and this is another question in line with the question yesterday—not pay the

same amount for the money, the unreturned balance of money furnished by the Federal Government, which the Federal Government has to pay to get the money for you?

General VOGEL. No, sir; that has been a matter for a great amount of consideration by the members of the Board, and there is a provision contained in the proposed financing measure which will take care of that particular item, whereby it is proposed that the Tennessee Valley Authority will pay a return on the investment.

There may be some question as relates to the exact rate which is adopted. I think that matter is open to considerable argument.

However, the principle is generally accepted that TVA should and would pay a return on the investment.

(Discussion off the record.)

PAYMENTS IN LIEU OF TAXES

Mr. PHILLIPS. I would like to say that I would hope that the provision which you are talking about would also include the paying of equivalent taxes. A good deal was said yesterday about "in lieu" taxes, and about paying Federal taxes.

The record is very clear that the amount of taxes paid by the TVA is about 25 percent of what would be paid by an industry operating in the same area. As long as that exists, it is a subsidized operation, no matter how competent it is, and no matter how efficient it is.

As long as there is the payment of any expense some competitor would pay, it is and must be a subsidized industry.

General VOGEL. Well, sir, you are including all taxes, Federal and otherwise?

Mr. PHILLIPS. That is correct.

General VOGEL. You are including Federal, State and local taxes?

Mr. PHILLIPS. That is correct.

General VOGEL. That is, perhaps, true. Of course, insofar as Federal taxes are concerned, and that would be taxes of the income variety, there is no profit, so to speak, upon which the Government would levy taxes. TVA is owned by the Federal Government. The taxes or the money returned to the States and local interests are based upon power sales (being 5 percent of gross, exclusive of sales to the Federal Government) and I think those will roughly approximate what private enterprise would pay to those same units of Government.

At least, I may say that it is satisfactory to the States and to the counties who are receiving those moneys.

Mr. PHILLIPS. Because if they do not, there will be, of course, the rising tide, which Mr. Jensen spoke about yesterday, of protest on the part of the citizens of other States, that there is preference and subsidy for one particular area.

You said yesterday, General, that you did not want Tennessee considered as a blighted area or benighted area, I think, which seemed to be indicated from some of Mr. Wessenauer's testimony at one time.

I do not think he intended it so, by any means.

General VOGEL. I do not believe he did.

BENEFITS OF TVA POWER PROGRAM

Mr. PHILLIPS. However, I think this record will show, particularly the record based upon the Department of Commerce investigations

which they released on July 11, 1951, will show that these constant statements that Tennessee has benefited materially and that the people of Tennessee have benefited materially by having the TVA and its power have not been a wholly accurate and that the TVA is not an undiluted benefit to the State of Tennessee nor to the other States which receive the power.

This since all of this has been in the Congressional Record, and it has all been in the hearings of this subcommittee at least once.

But, in population increases, in business volume, in gross postal receipts—I do not know about income, and I am leaving that out—in construction contracts, in retail stores' payrolls, which is a good criterion in retail sales and particularly in new business corporations, Tennessee has not advanced; either not advanced at all, and in some instances has fallen back, compared to the other 10 States in the area in which it is situated.

I think there has been an increase in construction, but I can find that out very quickly.

Tennessee, in 1945, was in fifth place, and rose in 1946 to fourth place. It dropped in 1947 to ninth place, and rose in 1948 to third place, all of which is directly connected with expenditures for Federal construction in that area.

I think the same thing would apply to income, but I want to give you a chance to say anything you want in reply to these statistics.

The records of the Department of Commerce and other investigations in the area have not indicated that this is, as I said, an undiluted benefit to Tennessee. As a matter of fact, the United States Chamber of Commerce compared Tennessee with these other 10 Southeastern States as of 1930 and then in 1950, and found that Tennessee had made no advance during that time in the various criteria which are used in commerce as the testing criteria for improvement, progress, or failure.

The States around Tennessee which have been compelled to depend upon private power have done better than Tennessee, which has depended entirely upon TVA power.

Did you want to say anything about that?

General VOGEL. Yes, sir; I would like to. I have been very much concerned myself by the undue emphasis placed upon that particular thing, and the slanting which I think it has received at the hands of those who purport to be the champions of TVA.

Having come to the Tennessee Valley Authority from the position as division engineer in the southwestern division of the Corps of Engineers, I cannot help realizing that tremendous gains have been made in every part of our country in the last 20 years, particularly in the economy of the gulf coast region of Texas, and in regard to the growth of such cities as Beaumont, Corpus Christi, Port Arthur, Orange, and Houston.

And, we have seen it in many other parts of the country.

I do not wish to belittle the accomplishments by the TVA, nor the great gains which have been made in the valley, but I am concerned about the overemphasis and the slanting, because I am afraid that people have come to get somewhat of an erroneous impression and, in fact, I do not like that argument at all.

I think whenever we argue that the Federal Government is taking upon itself to do something for a region in the interest purely of that

region, to raise the level of income to that of the national average, that we are talking socialism, and I do not think we have to talk socialism.

I think there is a simple test for the justification of every Federal project, and I would like to state that I consider it to be this:

When a project for the full development of any of our natural or human resources lies beyond the ability of local interests or State governments to perform, and when such development is in the national interest, and I underline those words, it becomes a proper undertaking for the Federal Government.

When anticipated benefits exceed cost, it is also in the nature of a good business investment. I think that is the kind of thing we should bring forth in connection with the operations of the Tennessee Valley Authority. This is something that the Nation has a proprietary interest in, and although we are anxious and happy to see developments within the region accrue as a result, still we must never forget that the Federal Government is making an investment in its own national interest.

I have been concerned also about groups who for their own personal aggrandizement and their own personal welfare have taken it upon themselves to campaign along the line that you have just indicated.

I refer to groups such as the Citizens for TVA, which is clearly organized for propaganda purposes, and is probably one of the widest supported lobbies in the United States. I would like to read to you the purposes of that organization:

No. 1 is to inform the valley people about the current TVA situation, and then I am going to skip No. 2, and come back to it last, because 3 and 4 are somewhat innocuous.

No. 3 is to carry the story of TVA from the people of the valley to the people of the United States, and No. 4 is to inform people of the valley of similar problems in other public power areas.

Now, I come back to put my finger clearly upon point No. 2, which is to reeducate the valley people on the nature of TVA and their dependence upon it.

I think that it is entirely contrary to any of the principles upon which our Nation was founded—when we try to teach people that they are dependent upon anything, including the Federal Government.

I recently referred to that in a public utterance at Clinton, Tenn., and of course from various areas of the Tennessee Valley Authority I have received considerable criticism, but I still feel that it is not proper for any group to try to teach people of the United States that they are dependent upon something.

Mr. PHILLIPS. General Vogel, I was going to ask Mr. Rabaut if I might put that in the hearings, and it seems to me that this would be the most opportune time to put it in, because here is the opinion on the very same subject of the Tupelo, Miss., newspaper, in which the paper feels that the greatest threat to the TVA is the loss of goodwill due to this overemphasis upon factors which are not the basic factors. This, of course, is one of the communities in the TVA area which benefits from it, and which feels that the present efforts are detrimental to the TVA itself.

If that is agreeable with you, Mr. Chairman, I would like to put it in the record at this point.

Mr. RABAUT. Do I understand this is an editorial?

Mr. PHILLIPS. Yes, sir.

Mr. RABAUT. This is an editorial from the Tupelo (Miss.) Journal, of June 12, 1953, the subject of which is "Lost Goodwill Greatest Threat to TVA."

Without objection, we will place it in the record at this point.

General VOGEL. I would like to make it clear, sir——

Mr. RABAUT. You know an editorial has been described as a fellow's private preserve.

(The editorial referred to follows:)

[Tupelo (Miss.) Journal, June 12, 1953]

LOST GOODWILL GREATEST THREAT TO TVA

The Tennessee Valley Authority which has done a better job of publicizing itself than perhaps any other agency of the Federal Government has overplayed its hand.

It has talked so much about the prosperity it has brought the people of the area it serves that the rest of the Nation has grown jealous.

Believing the TVA talk that it is responsible for a major portion of the Midsouth's progress people in other sections of America have begun to ask themselves: "Why should we help foot the electrical bill of people in an area which claims to be gaining prosperity at a rate faster than any other part of the country?"

As a result of TVA's claiming credit for so much of the progress that has been made in the Midsouth people from New England to Minnesota blame their woes on TVA when one of their industries picks up and moves south.

The typical northern citizen doesn't know where the TVA area is and doesn't know whether it is losing its industry to this region or another 300 miles away.

But he has heard of TVA and the claims it has made about building the South. And the northerner naturally blames it for his troubles when a plant in his own area moves elsewhere.

Now that it is faced with a crisis in holding the nationwide public support it once had therefore the time has come for the TVA to back up and admit that the fastest growth in the South actually has taken place outside the TVA area and that we who live within its borders are still as a whole just about the poorest people in America.

This, of course, would be quite true. For with the exception of giant projects like the Oak Ridge atomic-energy plant that Uncle Sam has plunked down in Tennessee, the TVA area has shown less rapid industrial growth than several other portions of the South.

And in income the TVA area is still dollar for dollar further behind the national average than it was in 1933 when the Tennessee Valley Authority was first established.

If we are honest and admit that we still need every possible benefit we can obtain, including the low-cost power provided by TVA, perhaps we can regain the goodwill our region once held among the common people of the North.

Few Americans object helping an individual—or region—when it is down.

But none like to help a person or region who accepts the bounty of others and then goes around bragging about how prosperous he has become.

Practical psychology, therefore, indicates a need to replace TVA's "I did it" attitude with a new humbleness in appreciation of the millions of dollars Uncle Sam has poured into our power program.

And right along with this new attitude should go an honest concession that we are still so poor and short of capital that we need every possible advantage we can obtain to continue lifting ourselves up the economic ladder as we have slowly and painfully been doing for the last decade.

The current congressional opposition to TVA is no flash in the pan.

It is a part of the same type of thinking which replaced Harry Truman with Dwight Eisenhower in the White House last fall.

And even if we should salvage some of TVA's needs from the present session of Congress, we would have the same difficulty getting money in the years ahead.

The TVA region's great hope of retaining the blessings of low-cost power, therefore, lie in rebuilding the goodwill all America once felt for us rather than in trying to high-pressure our way to victory.

There is no possibility whatever of winning the private utilities to our side. And there is little more likelihood of our gaining GOP support with arguments for TVA before the House and Senate.

Only if we can regain the goodwill of the common people of America from New England to California will the TVA remain safe in the years ahead from slow strangulation by hostile congressmen.

And the way to win friends is to show appreciation rather than deliberately arousing jealousy.

General VOGEL. I would like to make it clear at this point, in extension of my remarks, that I feel the Tennessee Valley Authority is a fine organization, comprised of a group of devoted people, and that it was soundly conceived in the national interest. I feel that the kind of people whom we have here with us exemplify the personnel who make it up. They are people who are dedicated to their jobs, and to doing the best that they can, for the Nation.

Mr. PHILLIPS. I think this subcommittee and certainly the one for the last few years, would agree with you.

The problem is that TVA now stands at a point of decision, and must decide what it is going to do in the future.

I still say that TVA has in it the ability to operate as a sound business venture, and it can be done, but it cannot expand on subsidy beyond those lines without endangering itself.

I have an excerpt from the Congressional Record, and I shall quote from an article which was inserted therein on February 16, 1955, and this is from the chamber of commerce report.

I shall read this one paragraph in regard to what I was saying about taxes, and I quote:

Had TVA paid taxes at the same rate paid by private power companies for the fiscal year ending June 30, 1953, such taxes would have amounted to about $80 million; resulting in a loss in operations of about $57 million.

If TVA were required to pay interest on the appropriations granted it by Congress, that loss would have been increased by another $24 million, which figure does not include the $10 million more for amortization. Thus, if TVA were run as an honest business enterprise, its books on June 30, 1953, would not show a credit balance of $19 million, but a deficit balance of $91 million. Yet, even with that deficit representing a subsidy paid by the Nation's taxpayers, the TVA system cannot produce enough cheap power to satisfy the demands of the consumers it was designed to serve.

Now, on this matter of cheap power, which is my next question I think no separation was made in the testimony yesterday between the categories of power sold. It is perfectly reasonable, and I think intended by the Congress when TVA was set up, that it should be sold to the communities or the REA's, and particularly it was supposed, as pointed out yesterday, that it be sold in the rural areas.

POWER FOR HOUSE HEATING

There is a very real question as to whether it was intended that power to heat houses in the area was to be sold at the same price that lighting power was sold, or power to run a milking machine, or whatever it was, because any utility man will tell you and you can tell yourself, General, that no private utility, operating without subsidy, could possibly sell heating power at the same rate that it sells lighting power.

We cannot do that in the community in which I live. I do not know whether any other communities can do it, except those which have a friendly government to pick up the check.

Last year, I think the number was about 20,000 families in the city of Nashville, and a total of about 110,000 families in the entire State

of Tennessee, were heating their houses by electrical current procured from TVA sources.

Could you bring that figure up to date for me, Mr. Wessenauer? General Vogel, would you like to comment upon the future policies of the TVA in selling heating power?

Mr. WESSENAUER. Mr. Phillips, the number of homes heated by electricity is in the neighborhood of 130,000 in the TVA service area.

Mr. PHILLIPS. That has gone up, then, about 20,000 during the year?

Mr. WESSENAUER. You referred to the State of Tennessee, and I believe the figures were applicable to the entire area.

Mr. PHILLIPS. That is not just for the State alone?

Mr. WESSENAUER. No, sir.

Mr. PHILLIPS. What is the total for the city of Nashville?

Mr. WESSENAUER. I do not have that information here.

Mr. PHILLIPS. I think it was 20,000 last year.

General, the problem involved there is critical, because that power is taken at peak times. That is not the power which is used when TVA would be glad to get rid of power. That is power which comes off with the lighting of the houses and heating of the houses, and that is really a drain upon you at the worst time, and you are selling it at the cheap rate.

General VOGEL. I will concur with you, sir, when you say it is critical to me, because my house is heated that way.

I might say, too, that it is not particularly cheap.

Mr. PHILLIPS. Is it not the same rate as the light rate?

General VOGEL. Yes, sir; but even so, it is not a particularly cheap way of obtaining heat in a home.

Mr. PHILLIPS. You mean the use of an electric heater?

General VOGEL. Yes, sir.

Mr. PHILLIPS. Well, I can answer that for you. I heated the hot water on the farm by electricity, for a long time, and it pretty near broke me.

What do you get from the distributor for what could be said to be the percentage that is used for heating? I think that would be the key as to whether or not you are losing or making money on it.

Mr. VOGEL. Mr. Wessenauer perhaps can give you those figures.

Mr. WESSENAUER. I believe we are getting about the average rate from the distributors, in the neighborhood of 4 mills per kilowatt-hour.

Mr. PHILLIPS. Don't you, yourself, think that is a low rate at which to sell heating power at the peak of the delivery time?

Mr. WESSENAUER. The test, Mr. Phillips, is whether the rate schedules as they are devised provide adequate revenues to cover the cost of operation, depreciation, and to earn a return on the investment. The records of our operation show that they do, and since the act calls for making power available at cost I think the rate is adequate.

Mr. PHILLIPS. We will not start an argument now over what constitutes cost. You are a representative of the TVA and I am an accountant, and that is a subject on which you and I could have quite an argument.

But I have a recollection that somewhere in here in the last few years you had a reduction of 2 mills. What was that? It was off the 4-mill rate, so actually it brought the cost——

Mr. WESSENAUER. May I explain that?

Mr. PHILLIPS. Yes, please.

Mr. WESSENAUER. The original wholesale rate schedule provided that distributors would get energy at the 2-mill rate block in an amount at least equal to the amount of energy which they sold at resale under the residential schedule at a rate of 4 mills.

That provision never amounted to anything, sir, in dollars. Several years ago it was deleted because it served no effective purpose.

Mr. PHILLIPS. I recognize that. Let us see whether you are right in the fact that it had no influence. What it did was to make a normal inducement, made by any businessman to expand his sales. What it did with the TVA was to expand the sales into the heating area, and since in my opinion, and in a good many other people's opinion, you find it difficult to sell heating power at 4 mills and come out even on it, it did increase your sales of a loss power factor.

Mr. WESSENAUER. The retail customers are selling heating, part of it at 4 mills, but most of it at 7½ mills. I would think that the heating revenue per kilowatt-hour is more in the neighborhood of 6 to 7 mills per kilowatt-hour on the average.

We have in our retail rate schedules, Mr. Phillips, a 4-mill block which is a promotional block designed to encourage the use of electricity for cooking and water heating. When you get to house heating you get beyond that block into the 7½ mill block, so I think the records, if you analyze them, would show that the revenue received by the distributor for his heating load is more in the neighborhood of 6 to 7 mills a kilowatt-hour.

TVA PROCUREMENT SOURCES

Mr. PHILLIPS. You testified yesterday on the various items of money spent in each State. You gave the amount of money spent in foreign countries. Do you remember what that figure was?

Mr. WESSENAUER. The amount in foreign countries?

Mr. PHILLIPS. Yes.

Mr. WESSENAUER. I believe $520,000.

Mr. PHILLIPS. Am I not right in saying that was almost entirely for generators?

Mr. WESSENAUER. Not generators. We have not bought any generators outside this country.

Mr. PHILLIPS. What do you buy outside?

Mr. WESSENAUER. I don't know what that item was for, sir.

Mr. PHILLIPS. It might be interesting. I think the subcommittee was under the impression that that money had been used to buy generators. If that is not so I think it would be a good idea to put in the record at this point what it was used for.

Mr. WESSENAUER. I can assure you it was not for generators.

CITY OF MEMPHIS POSITION ON DIXON-YATES CONTRACT

Mr. PHILLIPS. In the chairman's testimony yesterday he referred to the Dixon-Yates contract. I am not quite sure that that has as much to do with this subcommittee as it has with the AEC discussion later, but the word used was that it was "stalemated." I think Memphis was going to bring suit against Dixon-Yates if an attempt were made to carry the contract into effect.

I do not quite understand the practical situation because that would simply deny power to Memphis on its own suit. Memphis loses and nobody else loses. What would be any other result of attempting to have an injunction to sue on the Dixon-Yates contract by the city of Memphis?

Mr. WESSENAUER. I believe they feel very strongly, sir; that they should not be required to accept Dixon-Yates power delivered into their community.

Mr. VOGEL. May I comment on that, sir?

Mr. PHILLIPS. Yes.

Mr. VOGEL. The letter which was read from the mayor of Memphis yesterday, I have not actually had an opportunity to read closely or to analyze.

Mr. PHILLIPS. Nor have we, General.

Mr. VOGEL. However, it strikes me that it is very important that it was said in the closing statement that Memphis will not under any circumstance accept power from Dixon-Yates.

I would like to make it clear Memphis would not be accepting power from Dixon-Yates but they would be accepting it from the TVA. I am not aware of any statement from the mayor of Memphis or others to the effect that they will not take power from the Tennessee Valley Authority under any conditions if the Dixon-Yates plant is built.

I think there is quite a difference that we should look at.

Mr. PHILLIPS. I think if Memphis establishes that position they should, of course, refuse to take any power from TVA, because TVA last year bought 14 percent of its power from private utilities, and Memphis to be consistent would necessarily have to refuse that if they are going to refuse the Mississippi Valley Generating Co. power which is poured into the TVA grid, unless Mr. Wessenauer, who is in my opinion a very competent engineer, has been able to devise a means of separating the kilowatts so you can tell which ones come from private utility generators and which ones come from TVA generators.

Have you been able to do that without the subcommittee knowing about it?

Mr. WESSENAUER. I can only tell as of the point they are delivered into the system. After that I cannot trace them, sir.

Mr. PHILLIPS. Seriously, I have a feeling that perhaps we shouldn't make too much of an argument over what Memphis said in the belief that perhaps Memphis eventually would like to forget that it said it. I think we could have saved about an hour's discussion or more yesterday by just stipulating in this subcommittee that Memphis would like to get the cheapest possible power, without spending any of its own money, and if it can get power subsidized by the United States, that is exactly what it wants.

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I think subsidies are where you find them and different people have different views of what constitutes a subsidy.

Mr. PHILLIPS. This committee uses the word meaning that if any part of the cost which would have been paid by an industry, private enterprise, or a private utility, if any part of that had been picked up by the Federal Government, that was in effect a subsidy; and, furthermore, if in turn anybody had received some concession in the way of taxes, tax relief, a lower interest rate than other people paid, that is a subsidy.

You do not pay Federal income tax. That is a subsidy.

Mr. VOGEL. Let me tell you briefly what the TVA does and does not do as a matter of review in order that we may get it on the record.

The TVA first of all does pay all operating and maintenance expenses and depreciation, and also an amount equivalent to 5 percent on gross revenues received from within the States, exclusive of sales to the Federal Government.

Over and beyond that it derives earnings which have amounted to about 4 percent, and out of those earnings it has been amortizing the indebtedness to the United States which has been built up through appropriations.

Those are the things that it has done and is doing. What it is not doing, of course, is to pay interest on that investment by the United States and it is not paying a Federal income tax, as I previously indicated.

However, I would find it difficult to determine how you would pay a Federal income tax without a profit to pay it upon.

It might be argued, of course, that the Tennessee Valley Authority should return to the Federal Government an amount in reimbursement of taxes foregone were that power produced by private enterprise.

On the other hand, I think we can quite properly take the view that power sold at a lower rate has been stimulating to industry in the region and that that industry, as it has grown, has paid income taxes to the Federal Government which are very probably in excess of the taxes that would have been otherwise foregone, so that in all probability the Federal Government is not a loser by that.

As to the matter of interest, we are taking steps, as I have indicated, to rectify that, and it is hoped by that means to put the TVA on a basis, at least generally comparable to that of private industry, and I personally hold the feeling that the Tennessee Valley should be neither singularly handicapped nor singularly favored, that it is quite competent to stand on its own feet and operate as a business enterprise.

Mr. PHILLIPS. Do you think you could support a statement that because of the TVA this area has been stimulated?

Mr. VOGEL. I think so, sir. There is no doubt——

Mr. PHILLIPS. As compared to other areas?

Mr. VOGEL. It has been a large factor in the stimulation of growth, yes, sir. I do not mean to say that other regions have not been stimulated by Federal works brought in to them. Mind you, I pointed out earlier the development of the gulf coast region, the Texas gulf coast.

Mr. PHILLIPS. My point is that it seems to me in looking back over the years of testimony that what stimulated that area was the atomic energy installations, cities which went along with industries, and that

TVA, in effect, was stimulated rather than TVA doing any stimulating.

Mr. VOGEL. Of course, I think those things work both ways, naturally, but may I point out that the Atomic Energy Commission in all probability would not have been located there had there not been a source of power in abundance.

EBASCO CONSTRUCTION OF JOPPA PLANT

Mr. PHILLIPS. I hear a great deal of testimony about this Joppa plant, Ebasco, but I hear only half a statement each time.

It is clear in our record, and it was all of last year, that there is no question that the cost of construction at Joppa was more than was originally estimated.

There is no question the situation was not a happy one. I have not heard anybody put in the record today the facts of the case, and that is that it was the unions, it was a demand for tribute to the unions and the strike resulted because the tribute would not be paid. I was under the impression, Mr. Wessenauer, which I did not hear you mention yesterday, that this matter was confirmed by a court.

Am I right about that?

Mr. WESSENAUER. I recognize that they had union difficulties and that may have contributed to some of the additional cost. I was citing the fact that their costs were higher than ours. I think you recognize we had to deal with the same union people in the building of our plant.

Mr. PHILLIPS. That has nothing to do with it. This is a statement of fact.

The question was that the reason the Joppa plant cost more was because the private contractor who had it was subjected to tribute demands in the amount of a million dollars. He refused, a strike resulted, or a series of strikes resulted, and consequently the delay and additional cost eventuated.

I think you should have mentioned that, Mr. Wessenauer. You should not have left the impression that this was a normal situation because, as I recall, I think this went to court somewhere and the court determined that what I am saying was correct.

Mr. RABAUT. What is this about a million dollars?

Mr. PHILLIPS. That is what the trouble was at Joppa.

Mr. FOGARTY. It was not union trouble.

Mr. PHILLIPS. Do you want to describe that, General?

Mr. VOGEL. Anything I would say would be in the nature of hearsay evidence.

I would suggest that you call upon Mr. Leonard, who is in charge of construction, and whom I consider to be one of the most able men in the game.

I think you can thoroughly rely upon anything he may tell you.

Mr. LEONARD. I would like to suggest, General, that this may not be a question for me to answer.

We have our personnel director who could answer questions about personnel relations there.

Mr. VOGEL. But you might tell about the construction problems as you know them.

Mr. PHILLIPS. The witness who ought to be asked to come here is somebody representing Ebasco. Yesterday we had testimony from

the mayor of Memphis through Mr. Wessenauer and we had testimony from the Atomic Energy Commission through Mr. Wessenauer, and now we are getting testimony from EBASCO through the personnel now we are getting testimony from Ebasco through the personnel director of the TVA.

Mr. LEONARD. I personally cannot say why Ebasco's costs were higher than ours. I do know they were higher than ours and considerably higher than ours.

Mr. PHILLIPS. Yes. What about the strikes?

Mr. LEONARD. There may be some reason that I do not know about. All I know is what I have heard and what I read in the papers about their job. I never investigated their job. I never investigated their costs.

Mr. WESSENAUER. I believe, sir, that the General Accounting Office has submitted a rather comprehensive report——

Mr. RABAUT. Is this the report of the General Accounting Office?

Mr. WESSENAUER. Comptroller General of the United States on this subject.

Mr. RABAUT. Let us follow that.

Mr. WESSENAUER. I believe you will find in it that there are more than the labor difficulties, reasons other than labor difficulties given for the increase in costs.

I believe it might be better for the committee to use that report as the basis for determining this.

Mr. PHILLIPS. I have been handed, and I see for the first time, a report from Ebasco which was submitted, I presume, in connection with a subsequent contract, which shows the costs, estimated costs, and actual costs.

The actual costs of Ebasco were less than their estimated costs, running down this very quickly, and this is their experience in various projects they built for——

Mr. RABAUT. What are you quoting from?

Mr. PHILLIPS. Ebasco Services, Inc., exhibit No. 2, History and Qualifications in Design and Construction of Public Utility and Industrial Facilities, from 1905 to 1955. It is a 50-year record of their ability and background, I presume, Mr. Chairman—and I am looking at it for the first time myself—their ability and their record, which is a very commendable record.

In fact, as I go down here their percentage——

Mr. RABAUT. Is this a book written for the purpose of handing it to people they want to get business from?

Mr. PHILLIPS. It is a book filed with the Atomic Energy Commission, I gather, in connection with the AEC contract.

Mr. RABAUT. In other words, this is where they put themselves forward to gain the confidence of the Commission for the purpose of doing some work for them?

Mr. PHILLIPS. I would presume so except I would say it was a statement of their past history, good or bad, and since it is good therefore your interpretation that it is put forward to gain confidence is correct.

I think the question involved, Mr. Chairman, was to determine which was the best firm to be the engineers on the Dixon-Yates contract. Wasn't that the reason for which this material was all built up?

Mr. RABAUT. That is their presentation.

Mr. PHILLIPS. This is exhibit No. 2 of their presentation as to why they should be the contractor.

But my point is this, Mr. Chairman:

Yesterday the testimony before this committee indicated that this Ebasco contract had been, in simple language, a flop. I was pointing out the reason it was.

If the clerk will get me the hearings of last year's testimony before the Independent Offices Subcommittee I think it would show the statement of what the reason for it was. I do not think we should leave half a statement on the record without the other half.

Mr. RABAUT. I wonder why we would not take the information from the joint committee print, the report of the Comptroller General of the United States.

This is our own Government here which makes a report on this.

Mr. PHILLIPS. Yes.

Mr. RABAUT. 84th Congress, 1st session, under date of March 31, 1955, the report of the Comptroller General of the United States on the Atomic Energy Commission contracts for electric power, review of Ebasco Services, Inc., performance at Joppa, Ill., steam electric station of Electric Energy, Inc.

Wouldn't that be the proper thing to follow? I have not read this.

Mr. PHILLIPS. I have not, either. My whole point is that yesterday's record will show a statement showing the record of the TVA. I hold no brief for Ebasco nor any other utility nor any other builder, but I think if you are going to have one half of a statement in the record, then the people who read the hearings are entitled to have the other half of the statement also.

I know the figure of $1 million runs in my mind as to the demanded tribute.

Wasn't that taken to court, Mr. Swidler?

Mr. SWIDLER. Yes, sir. As I understand it there was an indictment of one of the labor leaders for extortion or atttempted extortion.

Mr. PHILLIPS. And as a result of that the strikes were called?

Mr. SWIDLER. I do not know whether all the strikes were called on account of that or not. The report of the Comptroller General discusses the labor difficulties, and it states that they undoubtedly contributed, but the Comptroller General concluded that they by no means explained the entire excess cost.

Mr. RABAUT. You have a paper in your hand there. Identify it, please

Mr. SWIDLER. It is a pamphlet entitled "Report of the Comptroller General of the United States on Atomic Energy Commission Contracts for Electric Power." This is a print of the Joint Committee on Atomic Energy.

Mr. RABAUT. The print I just referred to?

Mr. SWIDLER. Yes, sir.

Mr. RABAUT. What paragraph?

Mr. SWIDLER. I am quoting from page 18.

Mr. PHILLIPS. Is there another copy of that available in the room?

Mr. RABAUT. Yes.

Mr. SWIDLER. I read as follows, page 18, the last full paragraph on the page:

While we do not intend in any way to minimize the effect of labor difficulty in explaining the increase in the cost estimates, we do not believe that labor difficulty

alone is responsible for all of the increase. While the actual effect, in our opinion, is impossible to measure, we believe that some of the studies give too much emphasis to the effect of the labor difficulties.

And it goes on to say:

First, it should be realized that work stoppages were not confined to the Illinois side of the Ohio River. The other two projects that were being built in the same area—the AEC Paducah atomic energy plant and the TVA Shawnee power-plant—also suffered from work stoppages.

Mr. PHILLIPS. The work stoppages for TVA amounted to 11 calendar days and for Ebasco it amounted to 48 strikes, 96½ calendar days.

Mr. SWIDLER. The report compares the work stoppages.

Then I would like to read another paragraph in the middle of page 19. I am not qualified to make a comparison of work stoppages or to determine what the responsibility was, but, TVA had work stoppages and there was no extortion involved.

The third basic reason, in our opinion, is that the management activities at the site were not adequately performed.

Mr. PHILLIPS. Was the fact that you were a Government-owned plant any influence in the fact that you had no other work stoppages?

Mr. SWIDLER. I don't know. I do say that our overall labor record was better and our overall construction costs were much lower.

Mr. PHILLIPS. My whole point is that this company, Ebasco, did have an extortion problem, did have work stoppages, did have 48 separate strikes called one after the other at a time which would slow them up, delay or embarrass them, and I felt that if we were going to have this praiseworthy and desirable record of the TVA in the hearings yesterday we should be honest about it and have in it a statement of what the situation was at Joppa, because it is very evident that the company has a good record in the past, as I can tell from this exhibit No. 2, and also since it was chosen, with the approval of the executive agencies of the Government involved, to build the new plant for the Mississippi Valley Generating Co.

Mr. RABAUT. The witness was reading page 19.

Do you want to finish reading that?

Mr. SWIDLER. Yes, sir. I am still reading from the report of the Comptroller General. I have no basis for an independent judgment on this.

We believe that the Ebasco management at the site cannot avoid some of the responsibility for the abnormal amount of labor difficulty experienced. Two examples, in addition to the points previously made, are given to illustrate that productivity was unusually low. The EEI consultants indicated in their report that while a lower than average productivity was to be expected in this area, they had observed productivity on their visits and it seemed "extraordinarily poor." Also, information obtained from AEC files indicates that at the time EEI decided to terminate Ebasco's construction services, "only 2 or 3 men out of every 10 on the Joppa job were working."

That is the end of the quote.

Mr. PHILLIPS. I accept that. An analysis would require us to find out why they were not working. I am perfectly willing to accept that because the point is now clear on the record that it is a 2-sided subject and that we do not want to let the record go to press with only 1 side.

Mr. JENSEN. Since so much has been said about Ebasco on the record, and possibly some off the record in this hearing, and this testimony will be read by a lot of people, it is bound to hurt Ebasco. In all fairness, and I do not think a single member of this committee would want to hurt anyone unjustly, in order to be fair to ourselves and people generally I certainly am going to insist as one member of the committee that Ebasco have the opportunity to answer, that Ebasco have the opportunity to answer all of these accusations by coming before this committee and testifying.

Mr. PHILLIPS. Until that time, Mr. Chairman, I hope you will put these three pages from which I was roughly quoting in the record.

Mr. JENSEN. I do not know of anybody who has any connection with Ebasco, but I want to treat Ebasco just as I would treat any of you gentlemen, or any other American. I want to give them their day in court, to which every American is entitled.

Mr. PHILLIPS. I have never seen anybody representing Ebasco, to my knowledge.

Mr. FOGARTY. Since that request has been made I also make the request that the Joint Committee on Atomic Energy report of the 84th Congress, 1st session, Part I, Review of Ebasco Services, Inc., performance at Joppa, Ill., Steam Electric Station of Electric Energy, Inc., on March 31, be put into the record also at this point.

Mr. JENSEN. That is well. It gives the whole story.

Mr. FOGARTY. It might be a good idea to follow up Mr. Jensen's suggestion.

Mr. RABAUT. Inasmuch as the Joint Committee on Atomic Energy report is identified, we will also insert three pages from this bound volume entitled "Ebasco Services, Inc., History and Qualifications in Design and Construction of Public Utility and Industrial Facilities, 1905–55."

Without objection both of these items may be included in the record.

(The information referred to is as follows:)

[JOINT COMMITTEE PRINT, 84th Cong., 1st sess.]

JOINT COMMITTEE ON ATOMIC ENERGY

REPORT OF THE COMPTROLLER GENERAL OF THE UNITED STATES ON ATOMIC ENERGY COMMISSION CONTRACTS FOR ELECTRIC POWER

PART 1—REVIEW OF EBASCO SERVICES, INC., PERFORMANCE AT JOPPA, ILL., STEAM ELECTRIC STATION OF ELECTRIC ENERGY, INC.

INTRODUCTION

The Joint Committee on Atomic Energy in carrying out its statutory responsibility to consider long-term utility contracts of the Atomic Energy Commission has been deeply interested in the performance of Ebasco Services, Inc., as construction contractor of the steam electric generating plant of the Electric Energy, Inc., at Joppa, Ill. The committee's interest was accentuated by the proposal made by the Mississippi Valley Generating Co., that Ebasco Services, Inc., build the steam generating plant at West Memphis, Ark.

At the time of the waiver hearings in November 1954 (see Joint Committee Print on Exercise of Statutory Requirements of Sec. 164, Atomic Energy Act of 1954—Utility Contract Between Atomic Energy Commission and Mississippi Valley Generating Co., of November 4 through 13, 1954), the Joint Committee received assurances from the General Manager of the Atomic Energy Commission that, based on the then known overrun of costs of the Joppa plant, Ebasco

Services, Inc., would not be acceptable to the Commission as the construction contractor for the West Memphis plant.

In order to determine specifically how much more the Joppa plant cost the United States Government than originally estimated, the Comptroller General of the United States, after consultation with the Joint Committee, initiated a complete audit of the contract between the Commission and Electric Energy, Inc. As the first phase of this comprehensive undertaking, the Comptroller General made a complete audit of the financial records of Ebasco during the time when it was the construction contractor for the Joppa plant.

On February 3, 1955, Chairman Clinton P. Anderson, of the Joint Committee on Atomic Energy, wrote the Comptroller General of the United States as follows:

FEBRUARY 3, 1955.

Hon. JOSEPH CAMPBELL,
Comptroller General of the United States,
General Accounting Office.

DEAR MR. CAMPBELL: I am advised that the General Accounting Office has recently completed an audit of the utility contracts between the Atomic Energy Commission and the Ohio Valley Electric Corp. and the Electric Energy, Inc.

The Joint Committee would very much appreciate receiving a copy of the report on this audit as soon as it is prepared.

Very sincerely,

CLINTON P. ANDERSON, *Chairman.*

The Comptroller General replied on February 9, 1955, as follows:

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, February 9, 1955.

Hon. CLINTON P. ANDERSON,
Chairman, Joint Committee on Atomic Energy.

DEAR MR. CHAIRMAN: By letter dated February 3, 1955, you requested a copy of the report on the General Accounting Office audit of the utility contracts between the Atomic Energy Commission and the Ohio Valley Electric Corp. and the Electric Energy, Inc.

As explained to the staff of your committee, the audit of these utility contracts is currently in progress and will probably continue for several weeks. The report will be issued in several parts, each covering a significant and separate phase of the work. As each part is issued, a copy will be furnished the Joint Committee.

Sincerely yours,

JOSEPH CAMPBELL,
Comptroller General of the United States.

On March 31, 1955, The Comptroller General of the United States forwarded part I of the audit report with the following cover letter:

COMPTROLLER GENERAL OF THE UNITED STATES,
Washington, D. C., March 31, 1955.

Hon. CLINTON P. ANDERSON,
Chairman, Joint Committee on Atomic Energy,
Congress of the United States.

DEAR MR. CHAIRMAN: Herewith for the use of your committee is a copy of part I of our report on review of Atomic Energy Commission contracts for electric power. This review was made by our Division of Audits, and the report will be issued in three parts.

Sincerely yours,

JOSEPH CAMPBELL,
Comptroller General of the United States.

The complete text of part I of the Comptroller General's report referred to above comprises the remainder of this Joint Committee print.

REPORT ON REVIEW OF ATOMIC ENERGY COMMISSION CONTRACTS FOR ELECTRIC POWER

PART I—EBASCO SERVICES, INC., PERFORMANCE AT JOPPA, ILL., STEAM-ELECTRIC STATION

As part of our review of the power contract between the Atomic Energy Commission and Electric Energy, Inc., we reviewed the performance of Ebasco Services, Inc., the firm with whom EEI contracted for the design and construction of its electric powerplant at Joppa, Ill. We feel a review of Ebasco's per-

formance is important because (1) the large increase in the estimated construction cost of the Joppa plant resulted in a significant increase in the estimated annual cost of electric power to the Government, and (2) we understand that the Mississippi Valley Generating Co. (known as the Dixon-Yates group), who recently contracted with AEC to furnish a large block of electric power to the Government, is considering using Ebasco for design engineering and construction management of its powerplant at West Memphis, Ark. Our comments are presented under the following captions:

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These comments are based on a study of contracts between AEC and EEI, and between EEI and Ebasco; on a review of negotiation files, reports, correspondence, minutes of meetings, cost estimates, and other data made available to us at the Paducah, Oak Ridge, and Washington AEC offices, the Joppa EEI office, and the New York Ebasco office; and on discussions with officials of AEC, EEI, and Ebasco. In addition we have obtained pertinent data from regulatory bodies—the Securities and Exchange Commission and the Federal Power Commission. Comments are included on the history of the Ebasco organization and on the selection of power suppliers for Paducah, because we feel this background is part of the story of Ebasco's performance on the Joppa powerplant.

Summary

Our major comments are summarized below. Where appropriate, a page reference is given for a more complete discussion of a subject.

1. Ebasco is a wholly owned subsidiary of Electric Bond & Share. Middle South Utilities, a public utility holding company whose subsidiaries are serviced by Ebasco, was at one time a subsidiary of Electric Bond & Share, but at the present time is an independent regional holding company system. (See p. 7.)

2. Based on a proposal submitted by EEI in which Ebasco estimated that a four-unit powerplant capable of supplying a firm load of 427,500 kilowatts would cost $70 million, AEC decided to obtain 50 percent of its power requirements for Paducah from EEI. (See p. 11.)

3. One month later AEC increased the EEI firm load to 500,000 kilowatts, and Ebasco increased its cost estimate to $87 million, which estimate was used in the definitive contract. AEC executed what amounted to an open end cost-type contract with EEI on May 4, 1951, for 500,000 kilowatts of power. On October 14, 1952, AEC executed a similar type contract with EEI for 235,000 kilowatts of additional power, which agreement required EEI to add a fifth and sixth unit to its plant. (See pp. 11 and 12.)

4. Ebasco progressively increased its construction cost estimate for the first four units until April 1953 when it reported a cost estimate of $130 million to EEI. EEI immediately took over direct control of construction, and shortly thereafter terminated Ebasco's construction services entirely. (See pp. 13 and 14.)

5. Ebasco, EEI, EEI's consultants, and AEC have all issued reports which discuss Ebasco's increases in its construction cost estimates. (See p. 14.)

6. Based on our review, we are of the opinion that the basic reasons for the increases in Ebasco's estimates are:

   (*a*) The original estimate was based on inadequate information.
   (*b*) The labor problems encountered were greater than anticipated.
   (*c*) The management activities at the site were not adequately performed (See p. 17.)

7. The indicated cost of the Joppa administration building is $82 per square foot. We have been informed that a reasonable cost for an administration building is $20 to $24 per square foot. (See pp. 20 and 21.)

8. The total increase in the estimated cost of the Joppa powerplant is $51 million. Because of the nature of the open end cost-type contract, AEC will bear the major portion of this additional cost. The increase in AEC's annual power costs estimated to result directly from the construction cost increase is $2.5 million, or $62.5 million over the 25-year life of the contract. (See p. 21.)

9. It is EEI's opinion that, as a result of Ebasco's defective cost estimates, EEI incurred excess financing costs of approximately $5 million because it was forced to borrow additional funds at a rate of interest which was the highest paid by any utility in a decade. (See p. 22.)

10. There was a 50-generator months' delay in the commercial operation of the first four units of the Joppa plant which delay forced AEC to incur extra power costs during the construction period in an amount estimated to exceed $8 million. The AEC–EEI contract does not penalize EEI for failure to get the units in commercial operation on the dates stated in the contract. (See p. 22.)

11. There were delays in Ebasco's submission of cost information. Apparently one reason for this was the split in responsibility between the Ebasco Joppa staff and the Ebasco New York staff. (See p. 23.)

12. EEI's independent public accountants have questioned the propriety of almost $500,000 of Ebasco's billings to EEI for services rendered. Such billings to EEI totaled approximately $5 million. (See p. 24.)

13. At the present time the amounts of Ebasco's fee as well as Ebasco's billings for services are in dispute. EEI has proposed a compromise settlement to AEC, providing, so AEC informs us, essentially that Ebasco not be allowed a profit on its construction work but would be allowed a profit on its engineering work. AEC has advised EEI that the minimum negotiated settlement that it can accept, without court action, is one under which Ebasco would receive no profit for its services on the Joppa project. (See p. 26.)

14. The current status of Ebasco on AEC power projects is (1) Ebasco is essentially completed at EEI, (2) Ebasco is the independent engineer at OVEC, and (3) Ebasco is being considered for design engineering and construction management by MVGC (the Dixon-Yates group). (See pp. 26 and 27.)

Conclusions

Based on the findings set forth in this report, it is our opinoin that the best interests of the Government would be served if AEC decided to take the following actions with respect to Ebasco's participation in Government work.

1. Develop completely, for the record, all of the aspects of the disagreement between EEI and Ebasco pertaining to the amounts of Ebasco's fee and Ebasco's billings for service, and accomplish a timely settlement in the best interest of the Government (we believe it is important to point out that, based on discussions with AEC officials, we believe that AEC's planned actions are in accordance with this conclusion).

2. Defer consideration on Ebasco's participation in any work on the MVGC plant if MVGC recommends Ebasco prior to a satisfactory settlement of the EEI disagreement with Ebasco.

3. Withhold approval of Ebasco's participation, if recommended by MVGC, even after a satisfactory settlement unless MVGC will give AEC contractual assurance that any increase in the actual cost of construction of the facilities over the contract estimate of $104,115,000 will not be included in the cost of power taken by the Government.

Chronology of Significant Events

Owing to the long period of time covered by these comments, we believe that at the outset a chronology of some of the significant events will be helpful to the reader. It should be pointed out that the events listed below are more adequately described in our comments and that the listing does not include all of the significant events that we discuss in our comments. For convenience we have divided the listing into three parts: (1) Base Paducah power contracts, (2) expansion Paducah power contracts, and (3) termination of Ebasco's construction services.

Base Paducah power contracts:

October 18, 1950: AEC requested proposals from TVA and from American Gas & Electric Co.

November 3, 1950: AEC received proposals from TVA and from A. G. & E.

November 7, 1950: Sargent and Lundy developed estimated costs for constructing and operating an AEC-owned powerplant.

November 8, 1950: AEC decided to award the power supply contract to TVA.
November 13, 1950: Initial meeting held with representatives of private utility companies.
November 21, 1950: Initial proposal received from private utility companies to supply 100 percent of the power requirements.
December 1, 1950: AEC rejected the initial proposal of the private utility companies, but expressed interest in receiving another proposal for 50 percent of the power requirements.
December 6, 1950: Hearings held on AEC and TVA supplemental appropriations.
December 7, 1950: Revised proposal, containing Ebasco's construction cost estimate of $70 million, received from private utilities companies.
December 13, 1950: AEC decided to obtain 50 percent of its power requirements from EEI and 50 percent from TVA.
December 14, 1950: Additional hearings held on AEC and TVA supplemental appropriations.
January 23, 1951: Ebasco prepared a construction cost estimate totaling $87 million.
March 6, 1951: EEI executed a contract with Ebasco for engineering and construction services.
May 4, 1951: AEC executed a contract with EEI for 500,000 kilowatts of power.
July 31, 1951: Ebasco increased its construction cost estimate to $96,915,000.

Expansion Paducah power contracts:
January 1952: AEC requested bids from TVA and from EEI.
February 1952: AEC received proposals from TVA and from EEI.
May 20, 1952: AEC decided to obtain 75 percent of its power requirements from TVA and to request a bid from EEI for the other 25 percent.
June 6, 1952: Ebasco increased its construction cost estimate for the first 4 units to $103,306,000.
June 11, 1952: AEC received EEI's proposal.
September 24, 1952: AEC decided to obtain 25 percent of its power requirements from EEI.
October 14, 1952: AEC executed an interim agreement with EEI for 235,000 kilowatts of power.

Termination of Ebasco's construction services:
December 19, 1952: Ebasco increased its construction cost estimate for the first 4 units to $108,600,000.
February 27, 1953: The EEI board of directors approved Ebasco for engineering and construction of two additional units.
April 23, 1953: Ebasco reported to EEI board of directors that its construction cost estimate for the first 4 units had been increased to $130 million. The board decided (1) that EEI should take over direct control of construction immediately and (2) that consultants should be engaged to investigate and report on construction costs.
May 4, 1953: EEI advised AEC of plans to change the management of the Joppa construction project.
July 1, 1953: EEI and its consultants concurred on a reorganization plan for the Joppa job.
July 3, 1953: EEI advised AEC of plans for reorganization of the Joppa job.
July 23, 1953: AEC executed modification No. 6 to its base contract with EEI. This modification generally covers the provisions of the interim agreement executed October 14, 1952.
July 29, 1953: The EEI board of directors voted (1) to terminate Ebasco's contract for engineering and construction and (2) to enter into new arrangements with Ebasco for completion of engineering work.
August 5, 1953: Announcement made that the Bechtel Corp. had been chosen to complete construction of the Joppa steam plant.
September 4, 1953: EEI's consultants issued "preliminary" report on Joppa construction costs.
March 26, 1954: EEI's independent public accountants issued a report questioning Ebasco's billings to EEI.
May 20, 1954: AEC held a meeting with EEI to discuss the propriety of Ebasco's billings to EEI.
October 5, 1954: EEI transmitted its consultants' "preliminary" report to AEC on request.

February 18, 1955: EEI submitted to AEC the elements of a proposed compromise settlement of its controversy with Ebasco.

March 10, 1955: AEC advised EEI, in effect, that a settlement on the proposed basis was not acceptable.

The following are our detailed comments.

Electric Bond & Share (EBASCO) Middle South Utilities

Ebasco Services, Inc., is a wholly owned subsidiary of the Electric Bond & Share Co. At least three men—Curtis E. Calder, George G. Walker, and T. C. Westcott—are directors in both of these organizations. Middle South Utilities, Inc., was initially a registered holding company subsidiary of the Electric Bond & Share Co.; however, since December 1949, when Electric Bond & Share distributed and sold its holdings in the company, Middle South Utilities has become an independent regional holding company system. All three companies have their principal offices at 2 Rector Street, New York City. A brief history of the three companies is given below.

Electric Bond & Share Co.

The history of Electric Bond & Share goes back to the turn of the century when, in 1905, the General Electric Co. organized the Electric Bond & Share Co. as a wholly owned subsidiary. Twenty years later, General Electric distributed to its stockholders all of the Electric Bond & Share Co.'s stock that it owned, thus divesting itself of control.

The Electric Bond & Share Co.'s system grew and was the largest system to register under the Holding Company Act. At the time of its registration in 1938, it controlled 121 domestic subsidiaries including 5 major subholding companies with combined assets of nearly $3.5 billion. As a result of numerous reorganization plans and proceedings before the Securities and Exchange Commission and the courts, the Electric Bond & Share Co. had reduced its holdings by December 31, 1954, to interests in four companies: Ebasco Services, Inc. (100 percent), Two Rector Street Corp. (100 percent), American and Foreign Power Co. (54.6 percent), and United Gas Corp. (11.2 percent) plus other miscellaneous investments. Electric Bond & Share's fourth quarter report for 1954 places a valuation of $153,725,900 on the above investments. The SEC has approved a Final Comprehensive Plan (the Plan) for Electric Bond & Share's conformance with the requirements of the Holding Company Act. The company's fourth quarter, 1954, report states:

The company intends to seek a definitive exemption from provisions of the Holding Company Act to become effective upon completion of the steps provided for in the plan. If such exemption is granted it is contemplated that the company will become a registered investment company and as such will be subject to the provisions of the Investment Company Act of 1940.

Electric Bond & Share's annual report (U5S) for 1953 filed with SEC shows that there were approximately 38,000 holders of record of Electric Bond & Share Co.'s outstanding common stock and that the largest holding was 80,000 shares or 1.52 percent of the outstanding 5,250,000 shares.

Ebasco Services, Inc.

According to the 1951 annual report of Electric Bond & Share, the history of the Ebasco organization also goes back to 1905 when the staff of Electric Bond & Share recognized the advantages of a centralized service organization and established such an organization to render a wide range of services to public utility companies in the Electric Bond & Share system. In November 1935, as a result of the Holding Company Act of that year, Ebasco Services, Inc., was organized for the purpose of segregating the service operations performed by Electric Bond & Share for associated companies in the utility field. During the years following its corporate inception in 1935, Ebasco continued to function as a service organization.

After Electric Bond & Share started divesting itself of control in a large number of domestic public utility companies, it decided that Ebasco's services should be made available to public utility companies outside of the Electric Bond & Share system. This decision is noted in the 1951 annual report of Electric Bond & Share Co. on file with the SEC, from which we quote:

"Faced with the necessity, under the terms of the Holding Company Act, of disposing of such companies in the United States, the decision was made in 1942 that the most feasible means of preserving for the Bond & Share stockholders the valuable aggregation of talent represented by Ebasco, was for Ebasco to begin to render services to companies outside of the Bond & Share system."

Ebasco's annual form U–13–60 filed with SEC for the years 1950 through 1953 each state that the principal public utility holding companies whose subsidiaries are serviced by Ebasco are: American & Foreign Power Co., Middle South Utilities, and Texas Utilities Co. These three holding companies are, or were at one time, a part of the vast Electric Bond & Share system.

Middle South Utilities, Inc.

Middle South Utilities, Inc., is a relatively new holding company system created in May 1949 as a result of the liquidation of the Electric Power & Light Co., a subsidiary of Electric Bond & Share. SEC ordered Electric Power & Light to exchange is holdings in 4 electric operating subsidiaries (Arkansas Power & Light, Louisiana Power & Light, Mississippi Power & Light, and New Orleans Public Service) and certain other assets for the entire initial issue of Middle South stock. SEC also ordered Electric Power & Light to distribute its holdings in Middle South to its security holders. Under this distribution Electric Bond & Share acquired 16.2 percent of the stock of Middle South but by the end of 1949, Electric Bond & Share had distributed or sold all of its Middle South stock to its stockholders.

Mr. Edgar H. Dixon is president of Middle South. He and all of the other executive officers of Middle South have been officers or associated with the various companies which formally made up the Electric Power & Light interest.

Middle South is one of the 5 sponsoring companies of EEI, owning 10 percent of EEI's outstanding stock, and is the principal sponsor of MVGC, owning 79 percent of MVGC's outstanding stock. Both EEI and MVGC were organized for the same purpose—to build and operate an electric powerplant and to supply the Government a large block of electric power under a 25-year contract with AEC.

Selection of Power Suppliers for Paducah

Our review of the available record indicates that the selection process was initiated October 18, 1950, when AEC, acting on a recommendation of the National Security Resources Board, requested the American Gas & Electric Co. and and TVA to submit proposals covering the supply of approximately 850,000 kilowatts of power for its proposed Paducah plant. The NSRB's recommendation contemplated the possibility that the two organizations would develop a joint proposal.

The proposal received from the American Gas & Electric Co. rejected the possibility of entering into any joint arrangements with TVA or of building a powerplant near Paducah. American Gas & Electric did propose, however, to supply a block of firm power of from 150,000 to 300,000 kilowatts by adding two units to an existing powerplant 255 miles from the site. The TVA proposal provided for delivering the required amount of power at rates which AEC considered to be fair and reasonable and for constructing additional facilities including a new powerplant near Paducah. AEC considered a third possibility for the power supply by employing the engineering firm of Sargent and Lundy to develop the estimated costs of constructing and operating anAEC-owned powerplant at the site.

The Commission, in a meeting on November 8, 1950, considered the various proposals and by a majority vote decided to assign to TVA the power-supply responsibility in accordance with its proposal and to support TVA's request for funds before the Bureau of the Budget. The dissenting voter, however, Commissioner Thomas E. Murray, contacted several private utility companies regarding the submission of an independent proposal.

The initial meeting between AEC and representatives of private utility companies was held November 13, 1950, and the companies invited were Middle South Utilities, Union Electric Company of Missouri, American Gas & Electric, Public Service of Indiana, Illinois Power Co., and Kentucky Utilities. Mr. Tony G. Seal, vice president of Ebasco Services, Inc., also attended the meeting at the request of Mr. Edgar H. Dixon, president of Middle South Utilities. As a result of this meeting, a week later Mr. Dixon submitted, on behalf of the private utility companies, a letter outlining a basis for developing a power supply of 855,000 kilowatts by forming a new company, the stock of which would be owned by five private utility companies, and by building a million-kilowatt powerplant near Paducah.

Because of the pressing need to submit budget estimates, the Commission on November 21, 1950, reconsidered its earlier decision and reaffirmed its intent to award the power contract to TVA.

On November 27, 1950, AEC held separate meetings with TVA and with the private utility companies to review their proposals. The AEC minutes of the meeting with the private utilities contain the following excerpts:

"Selection of the design and construction contractors has not been made. Dixon indicated that Middle South would back Ebasco for the job. The other companies did not indicate concurrence or nonconcurrence.

"The estimated time schedule as prepared by Ebasco Services was presented as the official schedule prepared by the group. The schedule satisfies the need but appears to be extremely difficult to accomplish."

After the meeting AEC prepared an evaluation of the proposals of the two groups. One point that bothered AEC was the private utilities' construction cost estimate of $125 million, since the TVA estimate was $139 million and the Sargent & Lundy estimate was $153 million. In preparing the evaluation, AEC assumed a construction cost estimate of $139 million for the private companies (this split the difference between the private utilities estimate and the Sargent & Lundy estimate and equaled the TVA estimate). The evaluation indicated that the TVA proposal would result in an annual bill to AEC of approximately $2 million less than would result from the private utilities' proposal

On the next day AEC again met separately with TVA and the private utilities to review the evaluation. Minutes of the meetings indicate that TVA generally agreed with the evaluation. At the meeting with the private utilities, however, Mr. Seal objected to the end that the Ebasco estimate of $125 million for constructing the plant was adequate. The minutes indicate that all the other representatives of the private utilities, except Mr. Dixon, were impressed by the Sargent & Lundy estimate and felt that the compromise assumption to use $139 million as a basis for the evaluation was fair.

On the following day, November 29, 1950, AEC received a telegram from Mr. Dixon stating that his group did not feel that AEC's evaluation was fair to them and that he was submitting his own summary. Mr. Dixon's primary complaint involved AEC's increasing the construction cost estimate. The following is quoted from the telegram:

"First, we definitely do not agree with the staff's restatement of our $125 million proposal at the TVA figure of $139 million. The cost of a powerplant depends not alone upon capacity but also in a large measure upon design, structure, and similar items. Our estimate of $125 million was made by Ebasco whose experience in this field cannot be surpassed. We see no reason to recede from this estimate."

The Commission, in a meeting on December 1, 1950, again reaffirmed its decision to award the power supply contract to TVA, but expressed interest in receiving a proposal from the group of private utility companies for a supply of 50 percent of the power requirements.

On December 4, 1950, AEC wrote Mr. Dixon and requested a new proposal from the private power companies for supplying one-half of the necessary power. The next day representatives of AEC met with the private utility representatives in the New York offices of Middle South Utilities and Ebasco Services to facilitate the preparation of a revised proposal. At this meeting AEC was informed that a new company called Electric Energy, Inc., was being incorporated and that, while the construction cost estimate was not complete, preliminary figures indicated a total cost of $65,300,000 for the plant.

AEC testified before a subcommittee of the House Appropriations Committee on December 6, 1950, in support of its request for supplemental appropriations; the largest item in the request being the Paducah project. AEC's printed justification contained the following statement:

"In addition to the amounts provided in this estimate, the proposed supplemental estimate for the Tennessee Valley Authority includes amounts for the construction of additional power facilities, which are essential to the Commission's expanded program."

The private utilities group submitted its revised proposal on December 7, 1950. Although the negotiation files we reviewed did not indicate that an evaluation study, as such, was prepared, the files do contain a narrative writeup which indicates that the revised proposal eliminated the major part of the cost differential that had previously favored the TVA proposal and that "consequently, one-half of the power could therefore be secured from the private utilities for essentially the same cost as from TVA."

The revised proposal of the private utilities was reviewed by the Commission on December 13, 1950, at which time the Commission agreed that the proposal was attractive and requested that negotiations of a definitive contract with the private utilities for the supply of 50 percent of the power be started.

Additional hearings were held the next day by a subcommittee of the House Appropriations Committee. At these hearings the following information was presented: (1) AEC had decided to obtain 50 percent of its power requirements

from EEI and 50 percent from TVA, (2) the cost estimates and schedules on which the EEI proposal was based were prepared by Ebasco, (3) the cost of power from EEI was estimated to be 3.57 mills per kilowatt-hour (4) the EEI plant was estimated to cost $70 million, and (5) the EEI proposal was "just about the same" as the TVA proposal.

During the following 4 months there were numerous meetings and much correspondence between AEC, EEI, and Ebasco which culminated in AEC executing a definitive contract with EEI on May 4, 1951, for 500 000 kilowatts of power. This contract provided for supplying power essentially on a cost basis; however, it did not provide any limit on the cost of power to AEC nor did it give AEC any effective method of controlling the construction cost of the powerplant, which cost is a major element in the cost of power to AEC.

Approximately 6 months later (November 1951) AEC started negotiations for additional power needed at Paducah. In January 1952 EEI and TVA were requested to furnish proposals covering the supply of 940,000 kilowatts of power or any part thereof. Both groups submitted proposals in February, with EEI submitting subsequent proposals in March and April. AEC's economic evaluation of the various proposals from the two groups showed that the TVA proposals were more favorable.

The Commission, on May 20, 1952, took the following actions: (1) approved the assignment to TVA of the responsibility for furnishing 75 percent of the additional power required, (2) rejected the EEI proposals, and (3) invited a revised proposal from EEI for furnishing the remaining 25 percent of the additional power required.

EEI submitted a revised proposal on June 11, 1952, and after a 3-month period of negotiations, the Commission approved EEI for supplying 25 percent of the additional power required. AEC and EEI executed an interim agreement for 235,000 kilowatts of power on October 14, 1952.

Ebasco's Construction Cost Estimates

As noted above, during the negotiations of the EEI base contract Ebasco gave AEC preliminary figures which indicated a construction cost estimate of $65,300,000, and in the proposal of December 7, 1950, the Ebasco construction cost estimate was $70 million. One month later the cost estimate was increased to $87 million which is the estimate used in the definitive contract. While AEC requested an increase in the powerload and approved an increase in the size of the generating units after receipt of the proposal, the major part of the increase appears to have resulted from a reevaluation of the original estimate.

Ebasco progressively increased its construction cost estimate for the first 4 units until it reached $128,500,000 at May 12, 1953. Shortly thereafter EEI terminated Ebasco's construction services. The $128,500,000 estimate was a 47.7-percent increase over the $87 million contract estimate and an 83.6-percent increase over the $70 million proposal estimate.

The expansion program required EEI to add two units to its plant. Ebasco's initial construction cost estimate for units 5 and 6, made in July 1952, was $52 million. This estimate was increased in February 1953 to $59,315,000, or a 14.1-percent increase over the original estimate.

A chronological summary of Ebasco's various construction cost estimates, showing the date of preparation and the percentage of work completed as of that date, follows:

	Estimate	Difference over original	Difference over previous
Units 1 to 4:			
January 1951 (contract estimate)	$87,000,000		
July 1951 (10 percent completion)	96,915,000	$9,915,000	$9,915,000
December 1951 (20 percent completion)	98,950,000	11,950,000	2,035,000
June 1952 (30 percent completion)	103,306,000	16,306,000	4,356,000
December 1952 (55 percent completion)	108,600,000	21,600,000	5,294,000
May 1953 (70 percent completion)	128,500,000	41,500,000	19,900,000
Units 5 to 6:			
July 1952 (contract estimate)	52,000,000		
February 1953 (work not started)	59,315,000	7,315,000	7,315,000

For the purpose of completing the record, we are including both the original construction cost estimates made by the Bechtel Corp., the firm that assumed the

construction activity, and the most current Bechtel cost estimates as of the date of our field work, January 1955.

	Units 1 to 4
January 1954 (75 percent completion)	$130,204,000
November 1954 (98 percent completion)	127,970,000
	Units 5 to 6
January 1954 (6 percent completion)	$67,000,000
November 1954 (30 percent completion)	64,500,000

Termination of Ebasco's Construction Services

The progressively increasing construction cost estimates soon became a matter of concern to the board of directors of EEI. The minutes of the February 6, 1952, meeting of the board of directors contain the following statement:

"He (Mr. McAfee, the president of EEI) stated that both the extent of expenditures and the rate of progress have become matters of serious concern to members of the board and that in recent weeks he and other members of the board have devoted substantial time to the study of these problems and their possible solution."

As noted before, Ebasco increased its construction cost estimate for the first 4 units to $108,600,000 in December 1952. Among other things, this created a financial problem since EEI's financial plan filed with SEC only provided for funds of $103,500,000. This latter amount represented $3.5 million of equity capital invested by the sponsoring companies, plus $100 million borrowed from 2 insurance companies—$50 million from the Prudential Insurance Co. of America and $50 million from the Metropolitan Life Insurance Co. During this period arrangements were being made by EEI to finance the expansion program, the cost of which was estimated to be $52 million for units 5 and 6 plus $1,400,000 for working capital. In order to provide for the expansion and to insure completion of the facilities in the event of rising costs, EEI filed a financial plan with SEC in January 1953, in the amount of $69,700,000. This amount represented $2.7 million to be invested by the sponsoring companies, $2 million to be borrowed from the Guaranty Trust Company of New York, and $65 million to be borrowed from Prudential and Metropolitan.

We were advised informally by officials of EEI that at the time the $108,600,000 estimate was submitted, EEI felt the $108,600,000 was a relatively firm figure. The basis of this belief was (1) the estimate, in addition to being an increase of approximately $20 million over what was originally considered to be a realistic estimate, was the first estimate prepared since the design was 100 percent complete, (2) all purchases, except minor items, had been made, and (3) the construction itself was then over 50 percent complete.

In the following month (February 27, 1953), Ebasco reported to the EEI board of directors that it had accepted certain recommendations of the board with reference to changes in Ebasco's top management at Joppa. In view of the changes made, the board approved Ebasco for the construction of units 5 and 6.

Two months later (April 23, 1953) Ebasco reported orally to the EEI board of directors that it had again increased its construction cost estimate for the first 4 units, this time by over $20 million from the $108.6 million to $130 million. This increase resulted in the board recognizing that drastic action was necessary. After discussing the financial and other serious problems created by the new estimate, the Board decided that (1) EEI should take over direct control of the construction work immediately, (2) EEI should engage some eminently qualified consultants in the field of powerplant construction to investigate and report generally on the construction and costs of the Joppa plant, and (3) EEI should employ a firm of independent public accountants to audit Ebasco's billings to EEI. Officials of EEI advised us informally that, although the Ebasco construction services were not physically terminated until July 1953, the decision to terminate was actually made when Ebasco submitted its $130 million estimate.[1]

Mr. McAfee advised AEC, by a telephone call on May 4, 1953, that EEI planned to change the management of the Joppa construction project and to engage consultants to review the project.

EEI engaged Mr. Roland J. Strasser, retired member of Sargent & Lunday and Mr. L. C. Rogers of the Bates & Rogers Construction Corp. as consultants. On July 1, EEI and its consultants concurred on a reorganization plan. On July 3, Mr. McAfee advised AEC by telephone of the plan, which was to discharge the entire working force and Ebasco on July 10, and to bring in the Bechtel Corp. as the new construction contractor. AEC requested a slight delay in the schedule

[1] Although Ebasco reported an estimate of $130 million to the EEI board of directors on April 23, 1953, its detailed estimate prepared May 12, 1953, was only $128.5 million.

in order to insure the dependable operation of the second unit at Joppa. EEI agreed to the delay.

On July 29, 1953, the EEI board of directors voted to terminate the Ebasco contract for engineering and construction services and to enter into new arrangements with Ebasco for completion of the engineering work. The newspapers announced on July 31, that the Ebasco contract had been terminated and, on August 5, that the Bechtel Corp. had been selected to complete construction of the Joppa plant.

The EEI consultants issued a "preliminary" report, dated September 4, 1953, which apparently was the only written report they issued. We noted that this report was transmitted to AEC, at AEC's request, on October 5, 1954.

Studies of Increases in Construction Cost Estimates

Ebasco, EEI, EEI's consultants, and AEC have all made studies of the increases in Ebasco's construction cost estimate for the first four units at Joppa. These studies are identified as follows:

1. Ebasco (the Ebasco report, February 1953): Ebasco submitted a formal report comparing the $87 million estimate with the $108,600,000 estimate and explaining the increases. Ebasco has never formally submitted an explanation of the $19,900,000 increase which resulted in the estimate of $128,500,000, although AEC has reported that it has repeatedly requested this information. On our visit to Joppa (January 1955) we were given a written explanation of the $19,900,000 increase which Mr. T. White, vice president of EEI, advised us was based on a telephone conversation with Ebasco, New York.
2. EEI's consultants (the Strasser report, Sept. 4, 1953).
3. EEI (the Smith report, not dated).
4. AEC (the Paducah report, Jan. 20, 1955).

There follows a relatively brief summary of the major points made in each of these studies and a fifth section which contains our findings and conclusions based on a review of these reports and on independent studies.

The Ebasco report

The primary reasons that Ebasco cites for the increases are the unfavorable area labor conditions and the bad performance by labor. In addition, Ebasco maintains that the labor situation was the basic cause of practically all of the other factors which contributed to the increase in the estimate of final costs.

Ebasco's explanations can be summarized as follows:

1. Unfavorable area labor conditions required employment of a large percentage of inexperienced workmen and resulted in frequent and extensive jurisdictional disputes and work stoppages.
2. Labor productivity was poor.
3. Pressure to complete the work, which was behind schedule because of the labor situation, resulted in an increase in the labor forces over normal and economical requirements.
4. The longer construction period resulted in higher overhead costs, particularly in the interest charges.
5. There were increases in the cost of both materials and labor.

The Strasser report

The stated purpose of this report was to nalyze and report on the $41,500,000 difference between the original Ebasco estimate of $87 million and the last Ebasco estimate of $128,500,000.

The consultants felt that the original Ebasco estimate was far too low for an accounting of the wide spread between it and the $128,500,000 estimate. They accepted the November 1950 estimate made by Sargent and Lundy for AEC, after making certain adjustments to assure comparability, as a more realistic estimate.

The report's analysis of the increase can be summarized as follows:

1. Ebasco's original estimate considered to be too low by	$22, 683, 000
2. Escalations for equipment purchased and for increases in labor rates estimated to be	7, 350, 000
3. Excessive construction costs resulting from the poor labor siatuation and from improper planning or supervision estimated to be	11, 467, 000
Total	41, 500, 000

The $11,467,000 is accounted for in the report as the total of (1) $4,042,923 for increased financing costs due in part to the delay in the construction schedule, (2) $3,750,000 for the portion of premium (unworked) time that was considered excessive for a project of this size, and (3) $3,674,077 for unusually high construction costs, of which 11 examples are cited.

Since this is the only report in which poor management is noted to be a contributing factor in the increase in the construction cost, we are listing some of the examples cited, even though the report does not attempt to assign a dollar value to each example.

1. The large number of construction buildings (reported to be over 100) and the character of construction used in these buildings was unnecessary and too expensive for their purpose. The probable cost of these construction buildings was reported to be $5,600,000, which was considered to be an excessively high cost.
2. The locations of many construction buildings were not well planned as they had to be relocated as the job progressed, which made for extra expense.
3. Substantial savings could have been made in field supervision which cost in excess of $2 million.
4. There were many changes in the relocation of roads, parking facilities, and railroad trackage that were attributed to lack of proper planning.
5. Due to improper protection in the storage yard, extra expense was incurred in the cleaning and rehandling of some material and equipment.
6. The cost of form work was excessively high, probably due largely to improper planning or supervision for reuse of form material.
7. Due to an oversight, the administration building could not be located where originally planned, and the final location required an expensive pile foundation.
8. The cost of construction equipment plus the cost of maintaining such equipment was over $4 million, which was considered excessive
9. There was believed to be much inefficiency in the following departments which were classified as "incidental labor expense":

Guards, watchmen, janitors, etc	$902,000
Drinking water, ice, and related expense	442,000

The Smith report

This report was prepared by Mr. E. E. Smith, assistant treasurer and assistant secretary of EEI, and compares Ebasco's original estimate of $87 million with Bechtel's initial estimate of $130,204,000.

Smith's analysis is related to the following schedule:

	Ebasco, Jan. 23, 1951	Bechtel, Jan. 11, 1954	Increase
Land		$111,201	$111,201
Labor	$19,927,242	47,020,333	27,093,091
Material	56,230,758	66,057,097	9,826,339
Indirect costs	2,842,000	7,854,684	5,012,684
Overhead	6,500,000	12,327,619	5,827,619
Omissions and contingencies	1,500,000	1,473,962	−26,038
Transfer of common facilities and other costs to units 5 and 6		−4,640,896	−4,640,896
Total	87,000,000	130,204,000	43,204,000

The increase in labor of $27,093,091 was attributed to factors which were difficult to evaluate at the time of the original estimate and which accounted for substantial increases in labor costs. These factors are briefly summarized.

1. Productivity was very poor due to the vast construction programs being carried on in the area which made experienced labor difficult to obtain.
2. There was excessive rainfall during 1951.
3. There was a large amount of second-shift work which was not considered in the original estimate.
4. Due to falling behind in the work, efficient scheduling was sacrificed for speed.
5. Labor disputes resulted in a substantial number of work stoppages.
6. There was an increase in wage rates between the two dates.

The increase in material of $9,826,339 was attributed to changes in scope, factors not considered in the original estimate, and escalation. No comparison could be

made of indirect costs and the increase of $5,012,684 was not explained. The increase in overhead costs of $5,827,619 was accounted for primarily by the increased interest cost of $4,700,000.

The Paducah report

An explanation of the increase in the Ebasco estimates from $87,000,000 to $128,500,000 is given as part of a report on EEI Power Contract Administration issued on January 20, 1955.

The explanation in this report generally recites the points in the other reports with the emphasis on the labor situation and on changes in scope and underestimating.

The magnitude of Ebasco's labor-relation problem is indicated by a summary of EEI work-stoppage reports which shows 48 separate strikes during the period May 1951 through July 1953, point of termination of Ebasco. These strikes caused 96½ days of lost time by all crafts, plus considerable additional lost time by individual crafts. The report also notes that in November 1954 two union labor leaders, Evan Dale and James Bateman, were brought to trial on charges of extortion and attempted extortion of approximately $1,030,000 from the Joppa Steam Electric Station management personnel. Both men were found guilty—Evan Dale was sentenced to 15 years, plus a $20,000 fine, and James Bateman was placed on a 5-year probation, during which time he is not permitted to become an official of a labor organization, and fined $2,000.

Conclusions and findings

Based on a review of the above reports and on our own independent studies, we are of the opinion that the basic reasons for the increases in Ebasco's construction cost estimates are as follows:

1. The original estimate was based on inadequate information.
2. The labor problems encountered were greater than anticipated.
3. The management activities at the site were not adequately performed.

Each of these reasons are discussed below.

Probably the best indication of the limited extent of the information on which the original estimate was based is the following excerpt taken from Ebasco's original estimate:

"At the time this estimate was prepared only preliminary general arrangement and some study drawings were available. No final purchase orders had been placed on any equipment or materials but major items have been estimated on the basis of verbal commitments for a smaller installation or on prices prevailing at date of the preparation of the estimate, including anticipated escalation. Labor is estimated on two 10-hour shifts 5 days per week at existing labor rates. Estimate is based on construction schedule calling for trial operation of the first unit September 1, 1952, and the last unit March 1, 1953."

We believe that the reference in the above except to "a smaller installation" is significant. Based on information obtained from FPC, Ebasco designed and constructed 27 new steam electric plants in the postwar period, 1946–53. Of the 62 individual units constructed, 1 unit had a nameplate rating of 125,000 kilowatts, 1 unit had a nameplate rating of 100,000 kilowatts, and the other 60 units had nameplate ratings of less than 100,000 kilowatts. No individual plant had a capacity as high as 400,000 kilowatts. The original estimate for the Joppa plant was based on units with a 125,000-kilowatt nameplate rating and on a plant with a 625,000-kilowatt capacity. The above statistics on Ebasco's postwar activity through 1953 includes only new plants and does not include additions to existing plants, which information we understand is not readily available. Furthermore, we have learned from FPC and AEC that at the time Ebasco prepared the original estimate there were few if any companies which had had much experience in designing powerplants with such large units.

Accordingly, it seems reasonable to conclude that an estimate of the cost of constructing a plant, with units of such unusual size, based on only preliminary plans and some study drawings and without any detail design specifications or other firm data, could at best have been only a rough guess. As it turned out, the estimate was too low—very much too low.

Some of the studies explained that part of the material cost increase was due to escalation and to changes in scope. We noted that the original estimate provided for "anticipated escalation"; therefore, escalation should not be a legitimate explanation for part of the increase unless one states that the estimate did not adequately provide for escalation. Also, we do not agree that all of the numerous items listed as "change in scope" are actually changes in scope. For the most part they appear to be examples of inadequate estimates which did not

become apparent until detail designs were available. The largest "change in scope," moneywise, was a $1,730,000 addition for an earthquake design factor. We determined from TVA Shawnee personnel that the area was an earthquake area, and that such a factor should be provided for in an estimate. We do not believe, therefore, that such an increase resulted from a change of scope but, rather, resulted from inept estimating.

The second basic reason, in our opinion, is that the labor problems encountered were greater than anticipated. The record supports the fact that the Joppa job had substantial labor difficulty, both from work stoppages and from low productivity. The increase in labor cost is further aggravated by the fact that labor cost, in the original estimate, was based on a 2-shift, 5-day workweek at existing labor rates, with apparently no provision for premium time or wage increases. According to the Strasser report, the total amount paid for premium time was $5,750,000, of which $3,750,000 was considered excessive for a plant of Joppa's size, and, according to the Smith report, the wage rates for most crafts increased 20 to 30 percent during the 2-year period.

While we do not intend in any way to minimize the effect of labor difficulty in explaining the increase in the cost estimates, we do not believe that labor difficulty alone is responsible for all of the increase. While the actual effect, in our opinion, is impossible to measure, we believe that some of the studies give too much emphasis to the effect of the labor difficulties.

First, it should be realized that work stoppages were not confined to the Illinois side of the Ohio River. The other two projects that were being built in the same area—the AEC Paducah atomic plant and the TVA Shawnee powerplant—also suffered from work stoppages. As noted previously there were 48 strikes at Joppa resulting in 96½ calendar days of lost time for all crafts, plus approximately 60 calendar days of lost time for individual crafts. Based on information supplied to us by TVA, during the same period there were 33 strikes at Shawnee resulting in 11 calendar days of lost time for all crafts, plus approximately 120 calendar days lost time for individual crafts. While it is obvious that the magnitude of the work stoppages at Joppa was greater than at Shawnee, it is apparent that Shawnee also suffered a substantial number of work stoppages. AEC has reported, however, that TVA has informally advised it that the first 4 units at Shawnee were completed within TVA's original cost estimate of $88,500,000.

Second, a specific example where we believe that too much emphasis was given to labor difficulty was in Ebasco's informal explanation of the $19.9 million increase from its $108.6 million estimate to its $128.5 estimate. Ebasco attributed a $9 million increase in the installation cost of the production plant (an increase from $27 million to $36 million) to "the low unprecedented labor productivity" and "the long work stoppage in January" (1953). While the work stoppage referred to was major and involved all crafts for a 15½-day period, we find it difficult to conceive that such a work stoppage would account for a $9 million increase, particularly since it resulted in a 33⅓ percent increase in an estimate which was made when construction was more than half complete. We give little weight to the "unprecedented low productivity" factor, since at the date that the $108.6 estimate was prepared, December 1952, there had been 33 work stoppages plus considerable evidence of low productivity. It therefore appears that the estimators should have been alerted to and allowed for "low productivity."

The third basic reason, in our opinion, is that the management activities at the site were not adequately performed. Numerous examples of poor planning and supervision were cited in the Strasser report and have been listed previously. An AEC report of a meeting between AEC and EEI officials notes that EEI maintains it called Ebasco's attention to many mistakes made in the design and construction of the project and that in its opinion EEI could establish that much of the excess cost of construction was due to poor supervision by Ebasco.

In addition, we believe that the Ebasco management at the site cannot avoid some of the responsibility for the abnormal amount of labor difficulty experienced. Two examples, in addition to the points previously made, are given to illustrate that productivity was unusually low. The EEI consultants indicated in their report that while a lower than average productivity was to be expected in this area, they had observed productivity on their visits and it seemed "extraordinarily poor." Also, information obtained from AEC files indicates that at the time EEI decided to terminate Ebasco's construction services, "only 2 or 3 men out of every 10 on the Joppa job were working."

The final point to substantiate our opinion that Ebasco's management activity at the site was not adequately performed is the history of the job after the Bechtel Corp. assumed responsibility for construction. Within 2 weeks after Bechtel started construction there was a work stoppage that lasted 20 days;

however, since the settlement date of that initial work stoppage, October 16, 1953, the job has proceeded without any labor difficulty. We believe the situation was well summarized by Mr. Richard Cook, now Deputy General Manager of AEC, when, in testifying on the Joppa job before a subcommittee of the House Appropriations Committee in March 1954, he stated:

"In retrospect, I believe that the experience that has been enjoyed by Bechtel Corp. since they have assumed responsibility for the construction has indicated that they have the management and experience and know-how to avoid the difficulties that were previously encountered which caused labor-management disputes and strikes."

During our review of the increases in the Ebasco cost estimates we made as many independent determinations as we thought were feasible. One of our most startling findings concerns the exorbitant cost of the administration building and the equipment repair building at Joppa. While we appreciate that the cost of these buildings is not significant when compared to the total cost of the Joppa steam plant, we believe that a discussion involving a cost analysis of an everyday building will be better understood and, therefore, more informative than a discussion involving the cost of something as technical as a steam electric plant. In addition, Ebasco's experience with these buildings appears to be typical of its experience with the powerplant.

Ebasco estimated that the direct costs of the administration building at Joppa would be $159,000, or $33 per square foot for 4,800 square feet.

The direct costs of the administration building as of December 31, 1954 (at which date the building was essentially complete), was $299,795 or $62 per square foot. This is almost a 90 percent overrun. In addition, the most current cost estimate of the Joppa plant shows that indirect costs plus overhead are 30.8 percent of direct costs. By adding $92,337 (or 30.8 percent of $299,795) to the direct costs of $299,795 an indicated cost of $392,132 or $82 per square foot is obtained for the Joppa administration building.

AEC officials at Oak Ridge advised us that $20 to $24 per square foot would be a reasonable cost for an administration building. Figures given us by AEC show that the cost of the administration building at Portsmouth, an admittedly austere structure, was $15.62 per square foot and that the preliminary estimate for the Weldon Springs administration building is $18 per square foot.

We inspected the building and in our opinion it is not an elaborate structure. Ebasco's estimate of July 31, 1951, describes the buidling as follows:

"Single-story building 116 by 41 feet by 13 feet high, concrete block and brick-veneer construction with precast concrete sills and coping on structural steel frame. Foundation of reinforced concrete footings and grade beams with concrete floor slabs at grade. Roof concrete with 2-inch foam glass insulation and builtup roofing. Interior partitions of 4-inch cinder block and removable steel panels. Interior masonry walls are plastered and ceilings are suspended acoustical tile. Windows steel sash, door hollow metal and the walls also contain some glass block panels. Offices are air conditioned and heating and ventilating, plumbing, lighting are included."

When we brought the cost of this building to the attention of the manager of the AEC Oak Ridge operations office, he immediately ordered that an audit be made of costs incurred through December 31, 1954. The Oak Ridge auditors issued a report, dated February 7, 1955, and the only errors they noted were minor and involved approximately $3,000. The auditors' report states that they were unable to determine the specific reasons for the increase and turned the pertinent plans and available cost data over to an AEC engineer. The engineer could conclude only that labor and installation costs were excessive.

Of the $299,795 direct costs incurred through December 31, 1954, $291,381 were incurred by Ebasco as of July 27, 1953, its termination date. A schedule showing Ebasco's estimate and costs incurred, by broad construction features, follows:

	Ebasco's estimate July 31, 1951	Ebasco's costs July 27, 1953	Costs over or under (−) estimate
Substructure: Excavation, pilings, and concrete	$18,700	$77,368	$58,668
Superstructure:			
Structural and other steel	24,500	27,201	2,701
Walls, floors, and ceilings	34,400	52,283	17,883
Roof	18,200	18,926	726
Doors and windows	8,800	17,873	9,073
Building equipment:			
Heating and ventilation	19,500	33,951	14,451
Plumbing, drainage, etc	15,500	14,774	−726
Lighting and building wiring	10,000	44,093	34,093
Cleaning, finishing, and painting	9,400	4,912	−4,488
Total	159,000	291,381	132,381

Of the $291,381 of direct costs incurred, $84,218 represents material cost and $207,163 represents installation cost.

A detail study was made of the cost of the 29 hollow metal doors installed in the building. The material cost of the doors was $3,314 or $114 per door and the installation cost was $8,034 of $277 per door. Therefore, the total installed cost was almost $400 per door.

With respect to the equipment repair building, Ebasco estimated that the direct costs, exclusive of any equipment, would be $119,800 or $42 per square foot for 2,835 square feet.

The direct costs of the building at December 31, 1954, was $200,623 or $71 per square foot. After the adjustment is made to add indirect costs and overhead, the indicated cost of the equipment repair building, exclusive of any equipment, is $262,415 or $93 per square foot.

Based on our analysis of over 50 percent of the building costs, labor costs represent approximately 80 percent of the total cost of the building.

Effects of Ebasco's Performance

The increase in the construction cost of the plant and the other aspects of Ebasco's performance have two principal effects on AEC's power supply. These effects are (1) there will be a significant increase in the cost of the power to AEC, and (2) there was a substantial delay in the commercial operation of the first four units at Joppa which resulted in AEC incurring additional power costs. These two points are discussed below.

By letter dated May 19, 1954, the Chairman of the Atomic Energy Commission advised Representative Sidney R. Yates that the increase in the estimated cost of the Joppa powerplant was $58 million, and that the increase in AEC's annual power costs estimated to result directly from the construction-cost increase was $2,800,000. Over the 25-year life of the contract this estimated increase in power costs to AEC would be $70 million. Since the date of the Chairman's letter the estimated cost of the Joppa power plant has decreased approximately $7 million and AEC has advised us that its current estimate of the increase in annual power costs resulting directly from the construction-cost increase is $2,500,000, or $62,500,000 over the 25-year life of the contract.

One element of extra cost that was not passed on to the Government was the rise in interest cost resulting from the step-by-step increase in the estimated maximum cost of the project over an inordinately long period of time. According to an AEC report of a meeting held with EEI officials, EEI advised AEC that it had repeatedly requested Ebasco to furnish it with an estimate of the maximum cost of the project but each time it was given a figure that had to be increased very shortly thereafter. EEI's primary concern was to obtain an estimate high enough to include every possible contingency so that the necessary financing could be arranged. It is EEI's opinion that, as a result of Ebasco's defective estimates of maximum costs, EEI had to incur excess financing costs of approximately $5 million. EEI's reasoning is that it was forced to borrow additional funds at an interest rate of 4½ percent, "which was the highest [rate] paid by any utility in a decade," whereas if more realistic estimates had been provided at an earlier date the entire funds required for the first 4 units might have been borrowed at the 3 percent interest rate obtained at the time of EEI's initial borrowing.

The second effect of Ebasco's performance was the 50 generator months' delay constructing the units and getting them in commercial operation. A schedule owing the delay follows:

Unit	Date stated in contract	Date of commercial operation	Delay (in months)
	Oct. 1, 1952	Aug. 1, 1953	10
	Dec. 1, 1952	Sept. 1, 1953	9
	Feb. 1, 1953	May 1, 1954	15
	Apr. 1, 1953	Aug. 1, 1954	16
Total			50

One of the results of this delay was that AEC was forced to take a greater mount of costly "interim power" than it would have had to have taken if the ppa plant had been completed on schedule. "Interim power" was power nerated and delivered to AEC from sources other than the Joppa plant prior to mmercial operation of the fourth unit. The cost of "interim power" prior to mpletion of the fourth unit averaged 7.8 mills per kilowatt-hour, whereas the st of "permanent power" which was generated at Joppa and delivered to AEC, as cost less than 4 mills per kilowatt-hour. While we are unable to estimate ecisely the amount of additional cost that was due to this factor, we believe that conservative estimate is that AEC incurred over $8 million in extra power costs ecause of the construction delay.

The AEC–EEI power contract does not penalize EEI for failure to get the units commercial operation on the dates stated in the contract. AEC, therefore, sumed the risks of any delay in construction and any delay in getting the units work, at least to the extent of bearing the excess cost of obtaining its power from urces other than the Joppa units which were delayed.

Ebasco's Delay in Submitting Cost Information

One aspect of Ebasco's performance that was particularly onerous was that all the cost information was not kept at Joppa; therefore, EEI and AEC did not ve ready access to the complete cost picture in their efforts to control costs. his situation had the effect of delaying Ebasco's submission of cost information. ased on discussions with AEC officials, one reason for this apparently was the lit in responsibility between the Ebasco Joppa staff and the Ebasco New York aff.

AEC's efforts to obtain current cost information were directed to its contractor, EEI. AEC has reported:

"Numerous discussions were held between AEC officials and EEI management ncerning the manner of reporting the cost of the Joppa job. Of primary concern all of these discussions was the time delay between the development of the cost formation and its being made known to the Atomic Energy Commission."

e also noted delays of 4, 7, and 16 weeks between the date of preparation of me of the estimates and the date of their receipt by AEC. In fairness to basco, it should be stated that we did not determine what portion of these lays, if any, was the fault of EEI.

A clear example of Ebasco's delay in submitting cost information involves the 19.9 million increase in its December 1952 estimate of $108.6 million which sulted in an estimate of $128.5 million in May 1953.

As indicated previously, Ebasco presented orally a $130 million estimate to e EEI board of directors on April 23, 1953.

The AEC Paducah office, however, was clearly uninformed of such a develop- ent, although it apparently suspected something was amiss. The following is om an interoffice memorandum from W. D. Miller, Chief of Operations Division, the Paducah area manager:

"On May 12, 1953, I asked Mr. Turner White, Jr., of EEI, if they had a more cent cost estimate of the Joppa, Ill., plant than the last one of January 1953, * *. I pointed out to him, as I had several times in the past several months, at Ebasco's reports of expenditure and commitments, together with current timates of craft requirements, indicated that the estimate of $108,600,000 ap- ared to be several million dollars too low. Mr. White advised me that this gure was greatly in excess of several million too low, and was in fact $17 to

$23 million too low or that the new estimate was now in the order of $125 to $130 million."

AEC has also reported:

"Based on the information in the April 29, 1953, weekly cost report and the estimated manpower requirements then in effect, it appeared that the construction-cost estimate would exceed $110 million; the $128,500,000 figure appeared unreasonably high. Mr. Miller visited Mr. K. W. Reese, engineering manager, Ebasco Services, Inc., on May 14, 1953, to obtain a reconciliation between the data given in the weekly construction-progress report and the May 12, 1953, intermediate cost report. Mr. Miller learned in New York that there would be a new manpower estimate extending the job 7 months longer than the estimate available dated January 15, 1953, which would add 6,087 man-months to the construction job."

As noted previously, Ebasco's informal explanation of the $19.9 million increase attributed much of the increase to the 15½-day work stoppage in January 1953. The record indicates that the January work stoppage would logically be the major reason for the labor portion of the $19.9 million increase, since there was only one minor work stoppage (4 days) between January 1953 and May 1953, the date of its next estimate. It therefore appears that a substantial portion of the $19.9 million increase was apparent to Ebasco in February 1953, although AEC was not informed of the increase until May 1953. In addition, based on the cost information available to AEC at Joppa, it was unable to account for such a large increase and was required to visit the New York Ebasco office in order to obtain the necessary additional cost information.

Ebasco's Fee and Billings for Service

EEI entered into a contract on March 6, 1951, with Ebasco for engineering and construction services.

Among other things, the contract provided:

1. That Ebasco should receive, as compensation for services furnished, a fixed fee of $2,375,000, paid in monthly installments.
2. That the cost of services of the engineering staff should include, in *addition to salary compensation paid to such employees*, an amount for overhead expenses equal to 75 percent thereof. [Italic supplied.]
3. That the cost of services of the field office staff should include, in *addition to salary compensation paid to such employees*, overhead expenses in connection therewith. [Italic supplied.]
4. That, generally, all other costs incurred in connection with the Joppa project should be paid by EEI on a cost-reimbursement basis.

The contract also provided that Ebasco would furnish certain services at its own expense.

Both AEC and EEI have had audits made of Ebasco's billings to EEI under the contract.

During their initial audit at Ebasco's New York office, the AEC auditors tested the reasonableness of the 75-percent overhead rate applied to the salary compensation of the engineering staff employees. The AEC auditors ascertained that for the period from the commencement of the work through December 1952, the actual New York office overhead varied from 47 to 60 percent, or approximately $373,000 less than the amount billed by Ebasco for the period at the 75-percent rate.

On April 23, 1953, the day Ebasco reported its $130 million cost estimate to the EEI board of directors, the board employed the firm of independent public accountants that regularly audits EEI's financial statements to make an audit of the billings by the New York office of Ebasco to EEI. The independent public accountants audited the billings through December 31, 1953, and issued their report, dated March 26, 1954.

The independent public accountants' report shows that from inception through December 31, 1953, the Ebasco billings for engineering and construction services, exclusive of fee, totaled $4,725,305. Also, the amount billed by Ebasco to EEI for services exceeded the cost of such services to Ebasco by $362,725. It appears that this $362,725 is compensation to Ebasco in addition to the fixed fee provided in the contract. Finally, of the $4,725,305 billed by Ebasco, the auditors questioned the propriety of numerous items in a total amount of $471,499. The two largest items and a few of the smaller items that the auditors questioned are discussed below—the items discussed total $324,124.

1. Ebasco had a substantial portion of its drafting work performed by outside firms. Ebasco billed services of outside firms at salary costs, plus 75 percent for

overhead. The auditors questioned whether the contract provision that provides an overhead factor of 75 percent on employee salaries (see contract provision above) should be construed to mean employees of outside drafting firms. The auditors believe such services are in a category of other costs that should be billed at cost under the contract. The amount questioned was $166,315.

2. The amounts which Ebasco billed EEI as salary compensation for engineering services represented the salary compensation actually paid the employees, plus a loading (5½ to 9 percent) for vacations and absence. Referring again to the contract (see above), it provides "* * * cost should include, in addition to salary compensation paid to such employees, an amount for overhead expense equal to 75 percent thereof." The auditors point out that the contract provides that the 75 percent overhead should be added to "salary compensation paid" in determining cost; it does not provide that the amount of salary compensation paid shall first be upped by a loading for vacations and absence before applying the 75 percent overhead. The amount questioned was $129,782.

3. Ebasco billed EEI 75 percent overhead on all salary compensation paid for engineering services, including premium paid for overtime as well as straight time paid. While the contract does not distinguish overtime premium from straight time, it has been the auditors' experience that certain engineering firms customarily bill overhead only on straight time paid, excluding any overtime premium. As a further indication of the policy of other firms, the auditors point out that the invoices of some of Ebasco's outside drafting firms showed they billed Ebasco overhead and profit only on straight time paid for overhead. The amount questioned was $25,301.

4. Ebasco billed EEI for travel and living expenses of Ebasco officers. Various other travel and living expenses of Ebasco officers were not billed. The auditors were informed that the individual officers decide whether their expenses should be billed. The auditors point out that such reimbursement is not mentioned in the contract and that it has been their experience that certain engineering firms do not bill expenses of general officers. The amount questioned was $1,626.

5. The billings to EEI included prorated amounts of expenses of the labor relations manager at various labor meetings, based on the manager's judgment of the benefit of each client from the meeting. One such amount billed EEI was $500 for a portion of the expenses of a labor convention in Miami, Fla.

6. In 1951 Ebasco paid legal fees pertaining to services rendered associated clients. The auditors questioned whether such cost should be included in a non-associated client overhead like EEI, particularly since the expenditure applied to the period 1944–47. The amount prorated and billed to EEI was $600.

Soon after the independent public accountants issued their March report, on May 20, 1954, a conference was held between AEC and EEI officials at Oak Ridge. AEC reports of the meeting contain the following information:

1. The amount of Ebasco's fee and the amounts of Ebasco's billings were in dispute.

2. EEI had offered Ebasco a compromise settlement with the understanding that unless Ebasco offered EEI an acceptable counterproposal in about 1 month, EEI would be forced to litigate the entire matter.

3. If a compromise was arrived at it would be set out in a clearcut manner which could be easily explainable to AEC or any regulatory authority or public body.

Since the date of the above meeting EEI and Ebasco have had protracted negotiations for a compromise settlement. By letter dated February 18, 1955, EEI submitted the elements of a proposed compromise settlement to AEC. AEC has advised us that the proposed settlement provides essentially that Ebasco would not be allowed a profit on its construction work but would be allowed a profit on its engineering work. By letter dated March 10, 1955, AEC advised EEI in effect that such a settlement would not be satisfactory. The letter states, in part:

"This will advise you that the Atomic Energy Commission has given consideration to the matter of the proposed settlement of the claim of Electric Energy, Inc., against Ebasco Services, Inc., arising out of failures and deficiencies on the part of Ebasco Services, Inc., in the performance of its contract for engineering and construction services for your Joppa plant.

"The Commission has determined that the minimum negotiated settlement that can be accepted by the Commission without court action is one under which Ebasco Services, Inc., would receive no profit for its services on the Joppa project. * * * It is intended, however, that the amount of any settlement on this basis be the actual profit realized by Ebasco, as determined by audit."

AEC has advised us that EEI's independent public accountants are currently making an audit of Ebasco's charges to EEI for services rendered since December 31, 1953.

Current Status of Ebasco on AEC Projects

Ebasco is doing work for both of the private utilities groups that currently are supplying AEC electric power—EEI and OVEC (Ohio Valley Electric Corp.). We also understand that Ebasco is being considered by MVGC for design engineering and construction management work. The current status of Ebasco on AEC projects is briefly noted below.

As indicated previously Ebasco's construction services for EEI were terminated July 1953, but its design engineering services for units 5 and 6 were continued. As of January 1955, the design for units 5 and 6 was 97 percent complete. Ebasco's work, therefore, for EEI is essentially completed.

The OVEC board of directors appointed Ebasco to act as independent engineer under its mortgage to the Chase National Bank. As independent engineer Ebasco certifies that certain conditions provided in the mortgage agreement are satisfied prior to the trustee advancing funds as requested by OVEC. OVEC's original cost estimate for its two plants was $339 million. Ebasco's periodic cost estimates as independent engineer provide for "the estimated maximum effect of inflationary and escalationary trends" and have consistently been in the amount of $406 million. In addition to the cost of the plants OVEC estimated that its organization costs and working capital requirements were $17 million.

OVEC completed its arrangements for financing in July 1953, after entering into agreements which provided $440 million from the following sources:

Stock	$20, 000, 000
Bonds	360, 000, 000
Notes	60, 000, 000
Total	440, 000, 000

The agreements with both the bond and note purchasers provide for OVEC to pay a ½ percent per annum commitment fee on the outstanding unused portion of the commitments.

In December 1954, OVEC decided that it was virtually assured that the overall cost of the facilities under construction plus the required working capital would not exceed $398 million. OVEC has therefore arranged for a reduction of $42 million in its purchase commitments to be made effective February 1955. The immediate effect of this reduction in the commitment contracts will be savings of ½ percent per annum of fees payable heretofore on the $42 million, or a savings of $210,000 per year for the remaining period of the commitment.

Ebasco's work for OVEC is still in progress.

With respect to the possibility of MVGC (known as the Dixon-Yates group) employing Ebasco, we were advised by the Deputy General Manager of AEC, letter dated February 21, 1955, as follows:

"In response to our recent discussions concerning the possible use of Ebasco for management services on construction of the MVGC plant, we have been advised by the president of MVGC that if Ebasco is recommended for architect-engineering and for the management of construction, Ebasco will be used for designing the plant and as the company's agent to manage construction, coordinate and supervise the work as a whole, but subletting work to all contractors under competitive conditions. Ebasco will do no construction and will have no interest in construction except in a managerial capacity as agent for the company. Equipment will be purchased under competitive conditions. Ebasco will employ no labor force and personnel at this project and their employees other than office, clerical, and accounting personnel will be limited to some 60–75 employees at supervisory or inspector level."

The AEC letter also advised us that MVGC has not yet submitted its recommendations to AEC for architect-engineer, general contractor for construction, or management services on construction as required by the contract. At the time MVGC submits its recommendations, it will outline how the engineering and construction will be organized and executed.

Steam electric stations completed during period 1936 to 1954, inclusive—Actual versus estimated cost (substations or land not included)

Project	Number of units	New plant	Extension	Capacity in megawatts	Date of trial operation	Estimated cost		Actual cost		Percent variation of actual from estimated cost
						In thousands	Per kilowatt	In thousands	Per kilowatt	
					1936					
AA	1	X		18.75	December	$1,312	$70	$1,123	$60	(14.4)
					1937					
BA	1		X	12.50	February	1,515	121	1,520	122	.3
					1938					
CA	1	X		6.25	June	1,227	196	1,221	195	(.5)
CB	1	X		31.25	do	2,296	74	2,145	69	(6.6)
CC	1	X		25.00	July	2,174	87	1,853	74	(11.7)
CD	1		X	37.50	December	2,535	68	2,447	65	(3.5)
Total				100.00		8,232	82	7,666	77	(6.9)
					1939					
DA	1		X	25.00	January	1,809	72	1,710	68	(5.5)
					1940					
EA	1		X	31.25	November	1,959	63	1,827	58	(6.7)
					1942					
FA	1		X	12.50	January	580	46	700	56	17.1
FB	1		X	31.25	do	2,250	72	2,193	70	(2.5)
FC	1		X	12.50	July	1,300	104	1,463	117	11.3
FD	2		X	62.50	December	4,410	70	4,406	70	0.1
Total				118.75		8,540	72	8,762	74	2.5
					1943					
GA	1	X		37.50	June	2,565	68	2,671	71	4.0
GB	1		X	31.25	September	1,760	56	1,790	57	1.7
GC	1	X		31.25	do	2,355	75	2,593	83	9.1
GD	1		X	25.00	August	2,330	93	2,334	93	0.2
GE	1			43.75	December	2,410	59	2,815	64	8.5
GF	1		X	37.50	November	2,715	73	2,953	79	8.0
Total				206.25		14,135	69	15,156	73	6.7
					1945					
HA	1		X	31.25	December	2,040	65	2,122	68	3.9

Steam electric stations completed during period 1936 to 1954, inclusive—Actual versus estimated cost (substations or land not included)—Con

Project	Number of units	New plant	Extension	Capacity in megawatts	Date of trial operation	Estimated cost		Actual cost		Percent variation of actual from estimated cost
						In thousands	Per kilowatt	In thousands	Per kilowatt	
					1946					
IA	1	X		18.75	January	$2,240	$120	$2,599	$139	16.0
IB	1	X		43.75	November	3,740	86	4,888	112	23.4
Total				62.50		5,980	96	7,487	120	20.1
					1947					
JA	1		X	37.50	June	2,315	62	2,282	61	(1.4)
JB	1	X		33.00	April	3,345	101	3,204	97	(4.2)
JC	1	X		37.50	May	5,025	134	5,216	139	3.8
JD	1		X	18.75	December	1,640	88	1,767	94	7.7
Total				126.75		12,325	97	12,469	98	1.2
					1948					
KA	2	X		150.00	June, August 1949	36,500	243	44,031	294	20.6
KB	1		X	37.50	May	4,325	115	3,995	107	(7.6)
KC	1	X		43.75	April	4,225	97	4,487	102	6.2
KD	1	X		33.00	June	3,950	119	3,791	115	(4.0)
KE	1		X	31.25	September	3,490	112	3,351	107	(4.0)
KF	1	X		44.00	November	8,050	183	9,652	219	19.9
Total				339.50		60,540	179	69,307	204	14.5
					1949					
LA	2		X	25.30	February, March	4,700	186	4,717	186	.4
LB	1		X	12.65	February	2,300	182	1,918	152	(16.6)
LC	1		X	66.00	April	6,210	94	6,044	92	(2.7)
LD	1		X	66.00	June	6,175	94	5,240	79	(15.1)
LE	4	X		50.60	May	9,035	179	8,869	175	(1.8)
LF	1		X	44.00	June	4,550	103	3,849	87	(15.4)
LG	1		X	66.00	November	7,250	110	6,310	96	(13.0)
LH	2	X		132.00	do	13,155	100	10,560	80	(19.7)
LI	1		X	33.00	do	4,175	127	3,654	111	(12.5)
Total				495.6		57,550	116	51,161	103	(11.1)
					1950					
MA	3	X		69.30	December 1949, January	11,350	164	10,347	149	(8.8)
MB	1	X		33.00	August	5,100	154	4,887	148	(4.2)

					1950					
MA	3	X		69.30	December 1949, January	11,350	164	10,347	149	(8.8)
MB	1	X		33.00	August	5,100	154	4,887	148	(4.2)
MC	2		X	25.30	April	3,900	154	3,898	154	(0.05)
MD	2	X		88.00	August	9,150	104	9,260	105	1.2
ME	1		X	44.00	March	5,862	133	5,233	119	(10.7)
MF	1		X	33.00	do	4,900	149	3,893	118	(20.6)
MG	2	X		40.00	July	6,625	166	6,716	168	1.4
MH	1		X	75.00	December	7,040	94	6,522	87	(7.4)
MI	1		X	20.00	do	3,250	163	3,017	151	(7.2)
MJ	1		X	44.00	May	6,890	157	6,842	156	(.7)
MK	2	X		88.00	September 1949, May 1950	13,400	152	12,261	139	(8.5)
ML	2	X		88.00	October 1949, September 1950	16,300	185	15,531	177	(4.7)
Total				647.60		93,767	145	88,407	137	(5.7)
					1951					
NA	2		X	150.00	May	14,500	97	11,525	77	(20.5)
NB	1	X		66.00	July	7,050	107	6,490	98	(7.9)
NC	1		X	66.00	do	5,975	91	5,693	86	(4.7)
ND	1	X		66.00	April	7,300	111	6,980	106	(4.4)
NE	1	X		66.00	November	7,575	115	6,000	91	(20.8)
NF	1	X		33.00	August	5,225	158	5,045	153	(3.4)
NG	1		X	100.00	April	18,750	188	18,674	187	(.4)
NH	2	X		88.00	March	14,725	167	14,572	166	(1.0)
NI	2	X		132.00	August	21,152	160	20,745	157	(1.9)
Total				767.00		102,252	133	95,724	125	(6.4)
					1952					
OA	2	X		132.00	March, May	13,215	100	12,738	97	(3.6)
OB	1		X	66.00	May	7,100	108	7,457	113	5.0
OC	1	X		75.00	do	8,820	118	9,071	121	2.8
OD	1	X		44.00	do	6,930	158	6,797	154	(1.9)

(Discussion held off the record.)

POWER SERVICE AREA OF TVA

Mr. JENSEN. There was quite a discussion yesterday as to the area which comprises the Tennessee Valley.

It was finally pointed out on the map which hangs on the wall before us that the original area of the Tennessee Valley Authority was the Tennessee Valley watershed.

Is that right, General?

Mr. VOGEL. The only area defined in the act is that which can be clearly marked as the watershed of the Tennessee Valley; yes, sir.

Mr. JENSEN. It seems since that time the area has been expanded to some degree to take in what is commonly considered in the electrical world a feasible transmission distance.

A few years ago the Electrical Engineers Association considered that to be about 150 miles. I have never heard that that distance had been changed by the Electrical Engineers Association.

However, I have knowledge of the fact that the Bureau of Reclamation has in the past testified to the effect they felt they could wheel power from a hydroelectric dam and make it economically feasible to do so for a distance of 250 miles.

I don't know what TVA has decided as to what an economical wheeling distance actually is. I heard some testimony here yesterday to the effect it was 200 and 250 miles.

POWER INVESTMENT

Now let us get down to the original estimated cost of TVA and what it has cost up to date, that is appropriated funds by the Congress of the United States. What was the initial estimated cost of the TVA project?

Mr. VOGEL. I don't know, sir, that there was ever definite estimate made of what the so-called TVA project would cost, because, as you know, the Tennessee Valley Authority has in fact 2 characters—1 is that of a normal agency of Government whereby the natural resources of the Nation are developed. I refer to the principal purposes of improving the Tennessee River for navigation and to control the floods upon it; also to those other things which the Tennessee Valley Authority is doing in the development of the resources of the region.

Power business, on the other side, has expanded to a marked degree. That has come about as the result of circumstances which could not have been foreseen.

There was a war in the meantime, entrance of the atomic energy production, furnishing of power to the Air Force at Tullahoma, and to the Army Chemical Corps at Wilson Dam.

The best I can tell you, sir, is that in the power business, so to speak, approximately a billion dollars has been invested by the Federal Government, and it is my recollection that approximately the same amount has been expended on the resources development side of the ledger.

Mr. JENSEN. Yes, I think Congress appropriated approximately $2 billion to date for the Tennessee Valley Authority.

Mr. VOGEL. Right.

Mr. JENSEN. That is from testimony which I think we received when I was chairman of the Government Corporation Subcommittee of Appropriations in 1947. The original estimated cost of TVA was in the neighborhood of $200 million, and I think the record will verify that statement.

Of course, in the meantime we have had all these developments and conditions as you have explained.

RELATIONS WITH PRIVATE UTILITIES

Of course, private utilities in the Tennessee Valley were completely purchased by the Federal Government at the time the TVA was organized. Is that right, General?

Mr. VOGEL. I think so; yes, sir.

Mr. JENSEN. But you did sell some power to the private utilities outside of the TVA area and you are still selling some power?

Mr. VOGEL. We are still selling some and we are, of course, buying some.

Mr. JENSEN. Yes.

Mr. VOGEL. At the present time it is very small because of our situation with respect to water.

Mr. JENSEN. Is it not a fact that even though the private utilities are required to pay local, State, and Federal taxes, those utilities which surround TVA, that they are ready now, and they have been for many years, to furnish whatever power is needed in the Tennessee Valley and in that area which is marked on the map, the expanded area of TVA, is it not a fact that the private utilities are ready and willing to furnish the necessary power?

Mr. VOGEL. My impression, sir, is that they are willing, but I doubt very much if they are ready, because the growth of power demands everywhere has been very great in these last few years.

It is my personal opinion that that increased demand will continue. Certainly we have had excellent cooperation from our neighbors in the furnishing of power as it has been necessary, but they have not always found it easy to do.

Mr. JENSEN. I shall never forget, and I presume it is at least 8 years ago, when the Interior appropriations subcommittee was sitting in this very room discussing the Southwest Power Administration matters, and it was quite a discussion.

Douglas Wright, Administrator of Southwestern Power, had made some very great demands on the Congress. Texas utilities were attempting to get together with the REA's and the Southwestern Power Administration, and sign a contract for the integration of power on a partnership setup which would, as I said, integrate all the power of the different organizations and by so doing make sufficient power available at reasonable rates to that State and contiguous territories which the Texas Light & Power Co. served.

Mr. Rayburn, our beloved Speaker, came before this committee and said this:

> There are those who think that the Federal Government should own and control all the electric power in America. There are those who think that private utilities should own and control all the power in America. I don't belong to either school. I think it is a case where we must all work together. We must have Federal money, we must have private-utility money, municipal money,

REA money, money from everywhere in order to build enough power-producing and transmitting facilities to take care of the people of any area.

I remember I said, "Mr. Rayburn, I agree with you perfectly." I think every member of the committee agreed.

Mr. Kirwan is sitting on this committee today. He and I have been on the Interior Subcommittee of the Appropriations Committee for 13 years, and it has been a very fine association.

It seems, General, that the only place we have trouble and have a power shortage which really gives us trouble is where the Federal Government, or a State like Nebraska, attempts to almost monopolize the power industry in those areas.

That statement can be verified by the facts. In every other section of the country we have the private utilities, we have the Government in many sections of the country, we have municipalities, we have REA's that are working together, pooling the irresources and integrating their systems. It is working famously.

The Texas contract was signed and it is working famously to the benefit of everybody concerned, at least so I understand. The same kind of a contract exists in many other places.

Just as long as we continue to expect the Federal Government, the Congress of the United States—the hired men of the people—to appropriate enough money in any area to build our producing and transmission facilities to take care of that area, there is going to be power problems and power shortages. We can't help it, because Congress simply cannot appropriate enough money to furnish and to build all of these power-producing facilities and transmission facilities sufficient to take care of any area adequately so far as power is concerned.

And furthermore we are not obligated to do so.

Now is there any one of you who would like to comment on those remarks?

General VOGEL. Yes, sir; I will be perfectly willing to comment on them.

Your remarks cover, as you well realize, a great deal of ground. To begin with I, too, agree fully with Mr. Rayburn's thesis. I believe that the growth of this country as it has been and as it will undoubtedly continue into the future is such as to guarantee in our time that we will never see a surplus of power. I believe there is a field for Government enterprise and for private enterprise and I believe the quicker we can put the wheels to work at our problems, as you have indicated, the better it will be for all.

Certainly we are moving ahead in the development of our Nation with rapid strides. Our population is increasing for a great many reasons. I think one of the reasons our birthrate is increasing is because of the greater courage and confidence on the part of our young people. Only last evening, in the Army and Navy Club, I sat talking to an admiral and his daughter who is going to graduate from the University of Virginia either next week or the week after, and she said with great happiness that she hoped to get married and have at least five children.

Mr. JENSEN. Wonderful.

General VOGEL. I mention that as against the attitude of so many of us who faced the future with fear and dreaded to raise a large family because of uncertainties during the war years. However, be that as

it may, we are going to require power. We are moving into the age of automation, and we are going to require all kinds of power, including atomic energy, too.

Mr. JENSEN. Is it not a fact it takes a tremendous amount of electric power to make an atomic bomb?

General VOGEL. Certainly; there is no question about that.

Now looking toward a brilliant future, it seems to me we have a job to do and the quicker we can buckle down to doing it, the better.

I realize, sir, as well as you, we have had these areas of argument in the public power regions. I decry it; I think it has been brought about largely for reasons I gave in my earlier presentation and discussion, that there has been argument stirred up which there should not be. Certainly it is a difficult thing for any Federal agency to move forward and meet the growing demands upon it, the righteous demands, of an area, when it has to proceed with the uncertainty of having to come before the Congress each year for appropriations. I think there is something wrong in fact about an agency supplying power to a region having to come before Congress and seek appropriations which are derived by taxation on all of the people. The administration recognizes that and I think our Board has come to recognize it and we are moving forward in the direction of self-financing, which I think is sound and proper.

DIXON-YATES CONTRACT

And may I state, even though it may tend to open up another hornets' nest, that the Dixon-Yates contract, in my opinion, is entirely outside of TVA. It is signed with the MVGC Corp. by the Atomic Energy Commission in order to relieve us of part of our tremendous responsibility for furnishing power within this region and to serve as a stopgap until such time as a suitable method of financing can be devised and passed upon by you people in your wisdom.

Mr. JENSEN. Is it not a fact that other contracts similar to the Dixon-Yates contract, since you have mentioned that, have been entered into with private utilities in the past?

General VOGEL. Yes, sir.

Mr. JENSEN. Tell us about those contracts.

General VOGEL. Previous contracts by the Atomic Energy Commission with EEI and OVEC were entered into as a means of meeting an emergency which presented itself at that time.

Mr. JENSEN. What years were those?

General VOGEL. I would have to refer that question to Mr. Wessenauer.

Mr. JENSEN. It has been several years ago?

General VOGEL. Several years back.

Mr. JENSEN. Supply it for the record.

General VOGEL. Yes, sir.

NOTE.—EEI contract date, May 4, 1951; OVEC contract date, October 15, 1952.

Mr. JENSEN. This additional power which Tennessee Valley needs and is asking for comes from the fact that the city of Memphis is asking for power from this source. How many kilowatts of power does the city of Memphis request?

General VOGEL. They are using presently, as I recall, around 300,000 kilowatts.

Mr. JENSEN. Which is about half of the 600,000 that is necessary?
General VOGEL. Yes, sir.
Mr. JENSEN. In order to have adequate power in that area?
General VOGEL. Yes, sir.

Mr. JENSEN. I do not understand how it is the responsibility of the taxpayers of America to see to it that the city of Memphis, or any other city in America, is furnished their power needs when the city of Memphis can build a municipal plant like other towns do. I might tell you I was the leader in a move to put a steam plant in my own town of Exira, Iowa, a couple of years before I came to Congress, and we carried it big. Then the private utilities reduced their rates and we never did build the plant. So if you think I was a sweetheart of private utilities then or now you are badly mistaken; because I gave them a bad time. But I think now they have their house straightened out and, of course, the officers of all of these private utilities are just hired men for the mass of the people. They are the board and have to do what they think is right and best for the future and you can expect them to do that, and we want them do that because, after all, private industry has made America great. It is the taxpayers of America that we have to depend on, as I said yesterday, to furnish enough money so that we can appropriate money for such things as TVA, who pays no Federal taxes, or have not, up to date. So let us not be too tough.

General VOGEL. Your question with respect to the responsibility of the Tennessee Valley Authority which, of course, means the responsibility of the Government to provide adequate power to the city of Memphis, hinges back directly upon your query as to the established boundaries of the power service area. I would like to comment briefly upon that. Those boundaries, of course, are not established by law; nor are they more than, in one sense, definite lines drawn on a map. In another sense, however, they constitute a very real boundary in that private power transmission lines run up to them on the one side and Tennessee Valley power lines on the other. Whether one approves or not, it is a very real power service area and it constitutes a very real responsibility to the Tennessee Valley Authority, to meet the demands which are created by it. And since Memphis does lie within it, I feel there is a responsibility to provide the necessary power for that city to develop and go on to its full destiny.

As I mentioned a moment ago, the Dixon-Yates contract is an interim measure devised to assist the Tennessee Valley Authority in meeting this obligation until such time as a more permanent and satisfactory method can be thoroughly developed. I think merely to indicate, as I see it, what it intends to do, I should cite briefly an example.

A great deal has been made of the fact that the plant constructed by the Mississippi Valley Generating Co. will cost more than a similar plant constructed by the Tennessee Valley Authority. I do not think there is any question about that; I do not think there has been any argument to the contrary. That it is going to cost more to obtain power in that way, I feel sure. But also it costs a man more to buy a refrigerator on a time payment plan from a retailer, whereby he pays the carrying charges, against buying from a wholesaler through a friend. I do not think either method can be condemned; but, as I see it, the United States is in the position of the man who does not

have the ready cash to go out and buy in the cheapest manner possible, except by putting a large burden upon the American taxpayer. By purchasing the power over a period of years, the cost is deferred so that no immediate burden is placed upon the taxpayer.

ISSUANCE OF BONDS BY TVA

We will accomplish that same end, approximately, by a system of bond issues; because, in that instance, the people will of their own free will and accord buy bonds for the financing of the Tennessee Valley Authority.

Mr. PHILLIPS. Revenue bonds?

General VOGEL. Revenue bonds. And they will be repaid at a later time. It is an entirely different proposition than making it an involuntary act whereby they contribute.

Mr. JENSEN. Are you recommending that the Tennessee Valley Authority be permitted to float revenue bonds?

General VOGEL. There will be a recommendation made in due course to another committee, sir.

Mr. JENSEN. I am going to tell you in a very few words what I think about that.

We appropriate and have since the Tennessee Valley Authority was organized a lump sum of money to the Tennessee Valley Authority for flood control, hydroelectric power, forests, agriculture, and other Federal matters and all of that money, then, is turned over to a Board of three members appointed by the President and they not only use that money as they see fit, you being one of them, but also the revenue which comes in from the TVA revenue-producing facilities.

I was in the Tennessee Valley in 1947. I went down there unannounced. I talked to the people around the town; I talked to people on the street for a day before I presented myself to the TVA headquarters, and then we took a tour. I took a tour with the Board and the staff out in the country and we visited the farms. The last noon I was there, I was a Board guest at a luncheon in the hotel, just the three Board members and I, and I said this: "Gentlemen, you have established here an empire within our great American empire that is self-sufficient, that does what you 3 fellows say shall be done with the money that Congress appropriates and with your revenues, and I contend that is more power than any 3 men in America should have." Two of them argued with me but, as we were going out the door, one of them held back and he took hold of my coattail and held me back a little, and I noticed he wanted to talk to me. So we slowed up. The other 2 members got possibly 30 feet ahead of us. And he said "Congressman, what you said about we three fellows having too much power was exactly right." He said "Now, I do not know that you can do anything about it, but for heaven's sake do not let valley authorities spread into any other river valley in America; because, if it does in the other big 10 river valleys, one of these fine days 33 men will run America, because river valleys are no respecter of State lines and State sovereignties will be wiped out. So my advice to you", he said, "is to watch it. Do not let it spread." He said "Now you know how long I would last on this Board if you ever told that I said this"; but that is what he told me, so help me God, and I have told it much as I love him.

General VOGEL. I might add to that, sir, that you would also wipe out the need for the other agencies of government which are carrying on improvements throughout the United States. But however that may be, sir, and I certainly do agree with the idea of not expanding or extending the responsibilities of TVA, I would like to make clear at this point that, as far as I know, there is at least no spoken desire on the part of anyone to expand the power boundaries of TVA.

Mr. JENSEN. That is the thing I am worrying about. If you can build a plant outside of TVA, a steam plant—and I understand you have 2 or 3 now—and run transmission lines as far as 250 miles, then there is no reason in the world why you cannot continue on and on and on until you cover the whole United States.

General VOGEL. I shall attempt to speak for all of the members of the Board and, of course, if they do not agree, I shall expect them to tell you so, but I believe there is not in the minds of any one of the people who constitute the Tennessee Valley Authority a desire to expand beyond the present area. We merely are faced with the real responsibility, sir, of attempting to meet the demands within that region which somebody must meet.

Mr. JENSEN. Now let it be understood once and for all—and the record will prove it—that as one Member of Congress I have leaned over backwards to appropriate money for the development of our natural resources, as Mr. Kirwan will testify, and Mr. Kirwan has done the same thing. Maybe we appropriated in some instances too much money; but I think we were justified, as Mr. Kirwan says, many times to appropriate many, many more times the amount of money Congress has appropriated for the development of our natural resources. But we have had a war and had a war economy; and we simply did not feel like we could expend the necessary money and I do not think, actually, the necessary money has been requested in many cases for the development and the expansion of our natural resources.

I just have a few more questions here that I am going to ask, and then I shall yield.

LAND FLOODED BY RESERVOIRS

There is no question at all but what the Tennessee Valley needed flood control and they needed a lot of help, because that area was, economically speaking, away down at the bottom of the list compared to other areas in the United States. And of course the increase that has taken place there since the early days of TVA has been, to a very great degree, because of the Tennessee Valley Authority's $2 billion that it has spent down there.

But there is something else that always disturbs me when we build hydroelectric dams that inundate permanently productive land which we are going to need badly one of these days with the population increasing at the rate of over 2.5 million a year. We take that land out of production permanently and you can take and figure the income over a period of 50 years from the land that was inundated in the Tennessee Valley—that fine productive land, the best land in all Tennessee, that was inundated permanently. I understand about half of the land that used to flood occasionally has now been inundated permanently in the Tennessee Valley, and there is just one place from which

our economy generates, and that is from mother earth and when you take a lot of land out of production in any area, you stop economic growth.

General VOGEL. May I point out in that connection that one of the greatest blocks against our future growth is the limit on our water supply. I have lived in the Southwest for 2 years and I know that the most valuable commodity there, sir, is water and that as our Nation is continuing to grow, by the year 1975, our demands for water in this country not only to supply each man, woman, and child, but the growing industries and our commerce will amount, roughly, to that which would be flowing in the Mississippi River continually at bank-full stage, and we do not have bank-full stage in the Mississippi River very often. And I think it means, as time goes on, we are going to have to have more and more reservoirs in order to take care of the growth of our Nation and to meet our national economy.

Mr. JENSEN. Yes; but I do not want to cover up too much valuable productive land.

General VOGEL. I would be very happy if we could do it without covering up any.

Mr. JENSEN. In the past, Mr. Kirwan and I have recommended the appropriation of billions of dollars for reclamation, irrigation, hydroelectric dams, and power transmission lines and the related facilities, and we have been criticized sometimes for doing it. I apologize to no one for doing it. Of course the ideal situation is where you can find a dam site where the water impounded in back of it will not cover much productive land, and we have some of those sites in the West.

POWER FOR HOUSE HEATING

I do want to say I was greatly surprised to find that in the Tennessee Valley you are heating how many homes with electricity?

Mr. WESSENAUER. 130,000, sir.

Mr. JENSEN. 130,000. Why I remember once when my wife thought it would be nice to have an electric range. That has been about 20 years ago, or more. So we bought an electric range. The first thing we knew was that the electric bill for the range alone was running $11.50 a month, and we got rid of that electric range, believe you me, pretty quick. And here we are being asked to appropriate money to furnish power where you have a power shortage and to take the place of the power that is being used for heating homes and cooking in 130,000 homes in the Tennessee Valley. Gentlemen, that doesn't quite make sense. I was awfully surprised when I heard that.

EMPLOYMENT IN TVA

How many people are employed in the Tennessee Valley Authority as of this date?

General VOGEL. As of this date, my recollection is, it is around 20,000.

Mr. JENSEN. And what is the average annual salary for those 20,000 people?

General VOGEL. May I call upon the Director of Personnel for that?

Mr. JENSEN. We will get into this later, but I just want to have it in this colloquy.

Mr. VAN MOL. For salaried employees?
Mr. JENSEN. Yes.
Mr. VAN MOL. It is around $4,800.
Mr. PHILLIPS. That has gone up about $200.
Mr. VAN MOL. That average was as of 1954, not for the current year.
Mr. JENSEN. And for 20,000, $9,600,000; is that right?
General VOGEL. That is about what it multiplies up to.
Mr. PHILLIPS. How high has that average risen in 1 year?
Mr. VAN MOL. It was $4,851 in 1954, and $4,963 in 1955, an increase of $112.

I might point out that is the average salary for the so-called white-collar workers. There is another group of employees——

Mr. RABAUT. I do not think we ought to try to get into the salary business now, because we are going to develop that whole subject.

Mr. JENSEN. That is O. K. I will not ask any more along that line.

Mr. KIRWAN. I do not think I have too many questions. I want to try to find out some little about TVA.

DEVELOPMENT OF POWER AND OTHER RESOURCES

General, I think Wendell Willkie, a former president of the Commonwealth Southern, knew as much about electricity as any man who ever lived. He fought the Government like no human ever fought it over the development of TVA. Finally the Government bought the holdings of the Commonwealth Southern in the vicinity of TVA; is that correct?

General VOGEL. Yes, sir.

Mr. KIRWAN. Before Wendell Willkie died, I think he made the statement that the United States Government was correct in building TVA—the man who knew more about electricity in that day than probably all of us put together.

Now another question I want to ask. When we were in a depression, did not the President of the United States give an invitation to all in the private power industry to come to Washington and go over plans to try to develop this Nation and put some electricity into it? There were only 29 out of every 100 persons in the Nation who had electricity in their homes in the year of 1929, so he sent for the power people. The Government knew nothing about power and he sent for the power people to try to put this country on its feet and they refused. And that is why we have TVA and that is why we have the other power projects throughout this Nation.

I am going to give you as exhibit A how low we were in private utilities distributing power. As you know, from working in Ohio as an Army engineer, there is not a mountain in it; it is rolling hills like a prairie State, and there are 300,000 people today getting electricity in Ohio from rural electrification because of the fact private utilities were charging anywhere from $1,000 to $1,500 to put up a couple of wires and a couple of poles. They just took the cream and they refused to give them power. Now the record is there, I again repeat, that there are 300,000 people today getting electricity in Ohio that were deprived of electricity by the private utilities. They would not put up the poles in my town to furnish them power, but now Ohio is a well-lighted State. But in States down in the vicinity of where TVA

is, there were only a few people had electricity in their homes. Now we hear a lot said—I was not here yesterday, but today they are howling about the poor old Government being deprived of taxes. Is not that a foolish statement? Now you have been in the Defense Department; you are a general, and have you ever paid back any money to the Federal Government from national defense? We have given you billions, and have you ever paid back any tax dollars to the Nation on defense?

General VOGEL. I pay taxes, sir, just like any other citizen.

Mr. KIRWAN. I do not mean that; but has that part of the Government, known as national defense, paid any taxes to the Government?

General VOGEL. These things are all in the nature of good national defense and I think we can view with considerable pride the way we have moved as a nation and, in justification to you gentlemen who have made appropriations in the past, I think it is proper to point out, taking the spotlight for the moment off of TVA, that during the years of our development from about 1820 to the present, the Corps of Engineers has expended in the development of our rivers and harbors and on flood control a total of approximately $8.5 billion. That sounds like a lot of money and it is, of course; but I think we should realize that has been the investment upon which we have founded our country as a Nation. We have made our waterways navigable; we have made our cities available to develop the great steel industry and the automobile industry, and we are moving along further in that line. And I think certainly we cannot hope to compete with the powers that are arrayed against us with manpower alone, because surely they can outnumber us. But our strength lies in production and increasing our production through the development of electric energy in this Nation. One man can put out by himself about 35 watts of power. In other words, when you have one man working, all that man can develop is as much energy as a 100-watt bulb burning for a month or so.

So this is a proper direction in which we are moving as a Nation and therein lies our strength.

Mr. KIRWAN. But the question I asked is has that agency of the Government known as national defense paid any taxes on the billions that we have given them to win the war? It sounds like a foolish question——

General VOGEL. No, sir; they have not paid back any money, of course, but they have made returns.

Mr. KIRWAN. Not in money, but in the lives that have been laid down and all those things. But I said "money"; have they ever paid back any taxes on the money we gave them?

General VOGEL. Only as individuals.

Mr. KIRWAN. That is out of it. I mean this agency of the Government; not individuals. We are talking now about TVA as an agency of the Government. Did not TVA furnish the power to build the bomb?

General VOGEL. In large part; yes, sir.

Mr. KIRWAN. And has not she paid her taxes a hundredfold, if you are going to take it from the rest of the money that we gave to that agency?

Mr. PHILLIPS. If you will yield for a personal observation, Atomic Energy itself built a plant to deliver 250,000 kilowatts, as I remember.

Mr. KIRWAN. But in the matter of furnishing power, they did it?

Mr. PHILLIPS. That is right.

Mr. KIRWAN. And another thing, the Government has given a lot of money, and you do not hear other States howl about taxes, to what is known as reclamation projects. We have given over $7 billion, and do you ever hear anybody howl about reclamation money given to the other States, that they do not pay any interest on it?

General VOGEL. I have heard a little howling about it.

Mr. KIRWAN. But they do not pay any interest, and here we have all the States howling about TVA not paying taxes. Yes, in reclamation projects, on the power portion, they pay interest. And on reclamation, I think the gentleman from California will admit—and I am in his corner—that it certainly saved the Imperial Valley, and all the way down to Shasta Dam. If we ever took care of any State, we took care of California and we took care of it with billions, and yet they howl about the little taxes down in TVA.

Now we in Ohio do not get reclamation or cheap power. We know pretty well who is getting it in America and I think they do in the rest of the States. Yet before the time the Government went into it, it did not want to go into it; it sent an invitation to all of the power companies to participate in it and let us go forward, and they refused to participate. I have seen with my eyes and heard with my ears when they came in to build Grand Coulee, the farmers, ranchmen, and everybody up in there, that the private power companies would not extend any lines. They had to pay so many hundred dollars, $1,500, to put in a few poles and lines before they would give them power. And then 6 months before Grand Coulee started to distribute power as the law called for, some of the utilities called on every ranchman and farmer and said "If you will buy our power and sign a 5-year contract, we will put up the poles and lines." And why did they not do that before the Government got into it? They wanted them in every part of the United States, the private utilities who were distributing or producing power, wanted the common man, the taxpayer, to pay to extend the lines. He had to pay for all that; yet through the law we gave the privilege to the utilities to clutter up the farmlands with poles, and to do everything in the world; yet they have never kept faith with the people.

Surely, they can work together, the private interests and the Government, but it is about time that we stopped listening to that one-way street, private interests putting out the propaganda about the Federal Government "taking our business away" and the Government doing this and that. You would not be sitting there, General, in my humble belief, if the United States Government had not developed the power on the west coast and the east coast, and TVA, that you and I might survive and this Nation might survive and did survive when our back was to the wall, that built the planes and melted the aluminum, the bauxite. Is not that correct?

General VOGEL. Yes, sir.

Mr. KIRWAN. None of us would be here.

General VOGEL. May I say because we can come before you people, who have a common interest in the national defense, that I have great confidence that we will somehow arrive at a correct answer.

Mr. KIRWAN. But I get tired of listening to this taxes on the people. We in Ohio have a gripe when it comes to it. We do not get reclama-

tion and we do not get cheap power in Ohio. I, for one, will vote for electricity, will vote for cheap power and want them to have it and want it for America; because I know if the United States Government does something to help any 1 of the 48 States, that the town I live in, Youngstown, is going to benefit by it. So if one State helps the other, every State in this Union is going to be better off. That is why it is the United States.

When we get down to it, just the same as we are paying taxes to TVA, so are we going to pay taxes to furnish Dixon-Yates power. And where is that going to come from? Surely it is not going to come from the stockholders of Dixon-Yates; it is going to come out of the old tax bag.

General VOGEL. Taxes are paid in one way or another, of course, on every project.

Mr. KIRWAN. I can remember both conventions in 1920, both the Democrat and Republican Conventions as I was out in the city of Chicago and was going into a theater, just like you have your television to see a prizefight. They furnished you, when you paid your admission, with a pair of earphones and they told you that we were coming into the electric age. After they sold about 29 people out of 100 washing machines, frigidaires, or whatever it may be—only 29 percent of the people had electricity to buy one of them—so the other 71 percent that had no electricity had to go without those things. And no wonder we went into a depression, simply because the rights granted private utilities were never made the best use of.

You can take the trucking industry, which is a new industry, it was probably 1920 when the trucking industry came into being. Maybe they went back as far as 1911 when you saw them chugging along, but they did not have the power they now enjoy, where a truck can take your furniture in Ohio and move it to Dobbs Ferry and deliver it. But when you got there, there was no electricity in the home, and the utilities developing electricity is an old industry.

It is a long time since Thomas Edison came up with his light bulb, but they never did a good job and now they are in here when the United States Government showed the way and showed the light and are howling about you have to stop the Government from expanding, and not to do this, and not to do that.

You said a lot, General, when you said we have to have more reservoirs to stop the land being washed away with the floods and if they ever spend $30 billion on roads and no provision is made for the water, what do you think is going to become of us if all of that water is shot into the ocean in 5 minutes after it comes out of the sky, with the well paved highways?

General VOGEL. Without denying anything you have said, may I say further that we have come a long ways in 20 years; we have learned much better techniques than we had 20 years ago, and we are doing better in almost every line of production. I think private utilities have learned some lessons in that time, too. That is why I made the point earlier that I believe we should face the future with a realization that it is time to work together.

Mr. KIRWAN. Surely there was never any time in the history of this Nation that we could not have been working together. But I am only speaking from the record. The President of the United States invited every head of every utility to come to this city. The

Government did not want to go into the power business and asked them to go ahead and develop power, and they all refused to take this Nation and put it back on its feet and give it life, and the United States Government, the taxpayers, if you wish to call it that, was the one that had to carry the ball. Not only did the Nation have to carry the ball, because the utilities did not do it; the record is there and there is no way to get around it. That has been the history of public and private power.

DIXON-YATES CONTRACT

Mr. FOGARTY. Mr. Wessenauer, I was under the impression that the Dixon-Yates contract with the Atomic Energy Commission, in cooperation with TVA, was made for the purpose of relieving TVA of its load in the southwestern part of your area, so that you could push more of your load at the upper end in Paducah. Is that one of the reasons for it?

Mr. WESSENAUER. No; the basic proposal was we would be relieved of 600,000 kilowatts of the load in the northwestern corner of our area. That was the original proposal. In working it out, it was proposed to deliver power to us in the southwestern area and we to continue to deliver power in the northwestern area.

Mr. FOGARTY. But it is just an agreement by and between AEC and Dixon-Yates?

Mr. WESSENAUER. No; we are involved in it, too.

Mr. FOGARTY. And you have a request in the budget for $6 million for transmission lines if that plant is built?

Mr. WESSENAUER. That is correct, sir.

AFTERNOON SESSION

Mr. RABAUT. The committee will come to order.

This afternoon, we shall take up for consideration the general budget items.

Mr. PHILLIPS. Mr. Chairman, before you start on the specific hearings, could I ask one more general question of General Vogel?

Mr. RABAUT. Yes.

Mr. PHILLIPS. Thank you.

Mr. RABAUT. However, we do want to get into the general budgetary items, but you may proceed.

OAK RIDGE RELIANCE ON TVA POWER

Mr. PHILLIPS. At the end of the hearings this morning, some statement was made about the energy supplied by TVA to Oak Ridge.

Would you furnish for the record the amount of energy supplied? I had in mind the amount of energy supplied during the war years—I do not care particularly what period—but I want whatever your figures show as to the amount of energy supplied from the Atomic Energy Commission's own plant, and the amount of energy supplied by TVA as well as the amount of energy supplied by TVA which was purchased from private utilities.

General VOGEL. That applies only to the Atomic Energy Commission?

Mr. PHILLIPS. That is right—the amount supplied to the Atomic Energy Commission at Oak Ridge.

General VOGEL. Yes, sir.

Mr. WESSENAUER. For which period, sir?

Mr. PHILLIPS. I thought, perhaps, your figures would show the amounts from the beginning of Oak Ridge up to, as someone has already mentioned, the development of the atom bomb, or to the date of the explosion of the bomb.

Mr. WESSENAUER. Yes, sir.

Mr. PHILLIPS. I do not want you to go to the trouble to pick up a broken month, or something like that.

Mr. WESSENAUER. No, sir.

(The information requested follows:)

TVA supplied much the largest part of the power requirements at Oak Ridge during the critical months when the material was made for the atomic bombs which in August 1945 helped bring World War II to an end. This is shown by the following table of power requirements and supply at Oak Ridge through the fiscal year 1945:

Power for Oak Ridge, May 1943–June 1945

	Supplied by TVA	Generated by Oak Ridge steam plant
	Kilowatt-hours	*Kilowatt-hours*
May 1943–June 1944	197,069,000	21,100,000
July 1944–June 1945	1,358,850,000	499,317,000
Total	1,555,919,000	520,417,000

The power TVA supplied to Oak Ridge during that period did not include any power transferred from other power systems. In fact, during that period TVA was supplying more power to other systems than it was receiving from them

TVA POWER SERVICE IN AND OUTSIDE THE WATERSHED

Mr. PHILLIPS. Mr. Chairman, the general question which I want to ask is this, and I think it may interest you:

I have a compilation of figures showing the areas of the States of Kentucky, Tennessee, Virginia, North Carolina, Georgia, Alabama, and Mississippi, and it shows the total square miles in all of those States together of 334,369 square miles.

Then, I have the Tennessee Valley area, as has been described by the TVA officials, and that shows a total of 40,810 square miles in that area.

Mr. RABAUT. Where did you get that information?

Mr. PHILLIPS. I had it compiled for my use, but I will give it to you. I do not think I have a copy of it, but I will hand this to you in a second.

Now, I am coming to the area served by TVA power, and it shows that the total area served by Tennessee Valley Authority power is 78,160 square miles, or 23 percent of the total State area, or 79 percent of the valley area.

Then, outside of the valley, the square mileage served is 46,000, which is more than the area served in the valley.

I mean that more Tennessee Valley power is being delivered outside of the area originally contemplated by the Congress than is delivered

inside the area. However, it also shows a very interesting thing, and that is that about 21 percent of the Valley basin is not served.

I think it might be interesting to place this compilation into the record.

My question is:

Can you explain serving this greater amount of energy outside of the area than inside, and, second, why do you not serve the remaining 20 percent of the area inside?

General VOGEL. Yes, sir.

Mr. PHILLIPS. Do you want to look at the figures?

General VOGEL. No, sir. I have those figures well in mind.

I think Mr. Wessenauer made that point a little earlier in his presentation when he stated that the power service area was determined primarily by referendum of the people, and that those were the areas comprising the power service area, which are those in which the people desired to take the power.

I think your question is very well put as to why the regions outside were not served. That, of course, was for the same reason.

Mr. PHILLIPS. The region inside was not served; 21 percent of the region inside was not served.

General VOGEL. You want to know why the power service area inside of the valley area was not served?

Mr. PHILLIPS. Yes, sir.

General VOGEL. It was for the same reason, and it does seem a little bit of, you might say, an injustice to those people, upon whose land the water is falling, which is ultimately generating the electric power, which is going to give service to people of other areas.

Mr. PHILLIPS. The reason I asked the question, Mr. Chairman, is because I am particularly interested in the fact that more power is going outside the area than is going inside, and also whether this small 20 percent involved very difficult land to serve.

I realize that they have some hilly country down there which is rather sparsely populated, and whether that had anything to do with it or whether you, in simple language, were picking out the cream of the area, and not serving the less desirable areas which I think Congress contemplated in the wording of the act.

General VOGEL. I do not believe that was what was back of it and, perhaps, if those people today were given an opportunity, they would desire to be served.

There has never been, since my time with the Board, an indication of tendency on the part of the Board to alter the situation as it presently exists.

Mr. PHILLIPS. I think it might be interesting to insert into the record the tabulation to which I have referred. Do you want this in the record?

Mr. RABAUT. Without objection, it will be placed into the record at this point.

(The compilation referred to follows:)

State	State area, square miles	Tennessee Valley area		Area served by TVA power						Valley area not served by TVA power	
		Square miles	Percent of State area	Total square miles	Percent of State area	Valley area, square miles	Percent of valley area in State	Outside valley, square miles	Percent of valley area in State	Square miles	Percent of valley area
Kentucky	40,395	990	2.5	7,860	19.5	810	82.0	7,120	720.0	180	18.0
Tennessee	42,246	22,210	52.7	40,730	96.3	21,220	95.5	19,740	88.9	990	4.46
Virginia	40,815	3,050	7.5	680	1.66	670	22.0	0	0	2,380	78.0
North Carolina	52,712	5,430	10.3	670	1.27	800	14.7	60	1.1	4,630	85.25
Georgia	58,876	1,870	3.18	2,780	4.73	1,730	92.5	1,060	56.7	140	7.48
Alabama	51,609	6,800	13.2	8,730	16.9	6,570	96.8	2,230	32.8	230	3.38
Mississippi	47,716	460	0.96	16,720	35.01	460	100.0	16,130	3,500.0	0	0
Total	334,369	[1] 40,810 [2] 40,810	12.2	[1] 78,170 [2] 78,160	23.4	[1] 32,260 [2] 32,270	79.1	[1] 46,340 [2] 46,340	110.3	[1] 8,550 [2] 8,540	20.9

[1] Column total.
[2] Figured from square-inch total on other sheet.

Statement of Financial Condition

Mr. Rabaut. The appropriation for fiscal year 1955 amounted to $120 million, and the request for fiscal year 1956 is $27.55 million, or a reduction of $92,450,000.

At this point in the record we will insert pages 2 through 5 and 119 of the justifications, showing the financial condition of TVA, and the repayment program on the power investment.

(The pages referred to follow:)

Summary of appropriation financed budget (for fiscal years ending June 30, 1954, 1955, and 1956)

Page reference	Appropriation financed obligations	1954 actual	1955 estimate	1956 estimate
	ACQUISITION OF ASSETS			
	Navigation, flood control, and power program:			
7	Projects contributing to power supply:			
	Boone	−$182,536	$189,000	
	Fort Patrick Henry	1,731,887	446,000	
	Additional hydrounits:			
	Pickwick 5 and 6	38,307		
	Guntersville 4	−1,676		
	Hales Bar 15 and 16	149,146	46,000	
8	Hiwassee 2	908,364	1,846,000	$310,000
	Cherokee 3 and 4	63,982	50,000	
	Chatuge 1	936,077	968,000	
8	Nottely 1	237,273	1,832,000	215,000
	Fontana 3	205,249	3,000	
	Douglas 4	692,150	354,000	
	Johnsonville steam plant	1,268,900	378,000	−543,000
	Widows Creek steam plant	7,154,360	2,289,000	101,000
8	Kingston steam plant	35,321,343	29,847,000	4,250,000
8	Shawnee steam plant	22,670,998	23,496,000	2,581,000
	Colbert steam plant	15,084,584	21,006,000	2,354,000
8	John Sevier steam plant	23,919,975	28,176,000	7,228,000
8	Gallatin steam plant	17,243,403	28,949,000	9,369,000
	Total projects contributing to power supply	127,441,786	139,875,000	25,865,000
13	Transmission system facilities	15,576,132	6,702,000	7,710,000
	Power service building	105,473	450,000	
17	Additions and improvements at completed projects	1,355,662	1,072,000	468,000
20	Navigation facilities	236,129	412,000	406,000
24	Investigations for future projects	101,640	155,000	204,000
	Distribution of administrative and general expenses	1,559,338	1,632,000	1,100,000
	Total navigation, flood control and power program	146,376,160	150,298,000	35,753,000

Summary of appropriation financed budget (for fiscal years ending June 30, 1954, 1955, and 1956)—Continued

Page reference	Appropriation financed obligations	1954 actual	1955 estimate	1956 estimate
	ACQUISITION OF ASSETS—continued			
	Fertilizer and munitions program:			
25	Chemical facilities	$901,597	$1,174,000	$877,000
	Distribution of administrative and general expenses	23,987	21,000	25,000
	Total fertilizer and munitions program	925,584	1,195,000	902,000
	General service activities:			
30	General facilities	−318,890	892,056	38,000
	Distribution of administrative and general expenses	10,978	5,000	9,000
	Total general service activities	−307,912	897,056	47,000
	Total acquisition of assets, appropriation financed	146,993,832	152,390,056	36,702,000
	EXPENSES			
	Navigation, flood control, and power program:			
34	Navigation operations	277,450	272,000	100,000
38	Flood-control operations	130,058	137,000	166,000
48	Multipurpose-reservoir operations	2,009,591	2,204,000	2,000,000
	Distribution of administrative and general expenses	142,651	163,000	157,000
	Total navigation, flood control, and power program	2,559,750	2,776,000	2,423,000
	Fertilizer and munitions program:			
59	Fertilizer and munitions development	2,143,809	2,366,000	2,150,000
	Distribution of administrative and general expenses	88,410	84,000	90,000
	Total fertilizer and munitions program	2,232,219	2,450,000	2,240,000
	Resource development program:			
74	Resource development	547,071	347,000	400,000
	Distribution of administrative and general expenses	62,737	42,000	42,000
	Total resource development program	609,808	389,000	442,000
	General service activities: Maintenance of bridges financed by others on TVA dams	117	2,000	2,000
	Total expenses, appropriation financed	5,401,894	5,617,000	5,107,000
	CHANGES IN WORKING CAPITAL			
118	Inventories and property transfers	−207,420		
	Total appropriation financed budget	152,188,306	158,007,056	41,809,000
	SOURCES OF APPROPRIATED FUNDS			
	Appropriation	188,546,000	120,000,000	27,550,000
	Balance from prior year	15,974,362	52,266,056	14,259,000
	Prior year balance rescinded	−66,000		
	Balance carried forward to subsequent year	−52,266,056	−14,259,000	
	Total appropriated funds	152,188,306	158,007,056	41,809,000

Summary of corporate financed buaget (for fiscal years ending June 30, 1954, 1955, and 1956)

Page reference	Corporate financed obligations	1954 actual	1955 estimate	1956 estimate
	ACQUISITION OF ASSETS			
	Navigation, flood control, and power program:			
	Projects contributing to power supply:			
	Boone	$7,373	$1,000	
	Fort Patrick Henry	71,734	4,000	
	Additional hydrounit, Fontana 3	13,259		
	Johnsonville steam plant	14,718	13,000	$13,000
	Widows Creek steam plant	49,983	7,000	
	Kingston steam plant	258,940	164,000	71,000
	Shawnee steam plant	304,350	220,000	13,000
	Colbert steam plant	1,891	2,000	1,000
	Gallatin steam plant	12,807	21,000	21,000
	John Sevier steam plant	31,445	162,000	116,000
	Total projects contributing to power supply	766,500	594,000	235,000
13	Transmission system facilities	25,032,032	28,225,000	27,984,000
17	Additions and improvements at completed projects	135,489	26,000	146,000
24	Investigations for future projects	145,818	233,000	188,000
	Distribution of administrative and general expense	332,582	432,000	667,000
	Total acquisition of assets, corporate financed	26,412,421	29,510,000	29,220,000
	EXPENSES			
	Navigation, flood control, and power program:			
43	Power operations	78,342,155	104,338,000	120,194,000
48	Multipurpose-reservoir operations	1,628,864	1,742,000	1,575,000
	Distribution of administrative and general expenses	1,200,020	1,371,000	1,544,000
	Total navigation, flood control, and power program	81,171,039	107,451,000	123,313,000
	Fertilizer and munitions program:			
59	Fertilizer and munitions development	16,250,909	17,431,000	15,268,000
	Distribution of administrative and general expenses	304,027	359,000	375,000
	Total fertilizer and munitions program	16,554,936	17,790,000	15,643,000
	Resource development program:			
74	Resource development	547,071	520,000	600,000
	Distribution of administrative and general expenses	62,737	62,000	62,000
	Total resource development program	609,808	582,000	662,000
	General service activities:			
106	Reimbursable services	5,343,454	3,978,000	3,828,000
	Distribution of administrative and general expenses	124,387	100,000	15,000
	Total general service activities	5,467,841	4,078,000	3,843,000
	Total expenses, corporate financed	103,803,624	129,901,000	143,461,000
	CHANGES IN WORKING CAPITAL			
118	Inventories	5,899,560	3,820,000	6,878,000
	Total corporate financed obligations	136,115,605	163,231,000	179,559,000
	REPAYMENTS			
120	Payments to U. S. Treasury:			
	Retirement of bonds	5,000,000	15,000,000	14,000,000
	Repayment of appropriation investment in the power program	15,000,000	35,000,000	45,000,000
	Payment of miscellaneous nonpower proceeds	4,676,977	5,465,224	6,982,000
	Total payments to U. S. Treasury	24,676,977	55,465,224	65,982,000
	Total corporate financed budget	160,792,582	218,696,224	245,541,000

Summary of corporate financed budget (for fiscal years ending June 30, 1954, 1955, and 1956)—Continued

Page reference	Corporate financed obligations	1954 actual	1955 estimate	1956 estimate
	SOURCES OF CORPORATE FUNDS, CURRENT INCOME			
	Navigation, flood control, and power program:			
	Navigation operations	$18,151	$25,000	$31,000
	Power operations	131,992,034	186,986,000	221,920,000
	Multipurpose-reservoir operations	279,464	260,000	234,000
	Total program	132,289,649	187,271,000	222,185,000
	Fertilizer and munitions program: Fertilizer and munitions development	20,464,445	22,648,000	21,102,000
	Resource development program: Resource development	21,550	7,000	8,000
	General service activities: Reimbursable services	5,467,841	4,078,000	3,843,000
	Miscellaneous: Sale of retired plant and other miscellaneous receipts	2,335,378	2,873,000	1,191,000
	Total current income	160,578,863	216,877,000	248,329,000
	DECREASES IN RESERVES			
	Power proceeds:			
	Balance from prior year	37,757,712	36,755,746	33,419,746
	Balance carried forward to subsequent year	−36,755,746	−33,419,746	−37,516,746
	Total decrease in power proceeds	1,001,966	3,336,000	−4,097,000
	Nonpower proceeds:			
	Balance from prior year	4,676,977	5,465,224	6,982,000
	Balance carried forward to subsequent year	−5,465,224	−6,982,000	−5,673,000
	Total decrease in nonpower proceeds	−788,247	−1,516,776	1,309,000
	Total decreases in reserves	213,719	1,819,224	−2,788,000
	Total current income and decreases in reserves	160,792,582	218,696,224	245,541,000

APPROPRIATED FUNDS

TVA is requesting an appropriation of $27,550,000 for 1956, and proposes to utilize $14,259,000 estimated to be carried forward from 1955 for the projects and programs summarized on page 2. Of the total appropriation requested and balance carried forward ($41,809,000), $33,575,000 is for power facilities—continuing construction of generating projects under way and beginning construction of new transmission facilities required to connect the TVA system to the facilities of the Mississippi Valley Generating Co. and for an additional 154-kilovolt line to the Arnold Engineering Development Center. Capital additions required for other programs and distribution of administrative and general expenses bring the total estimate for acquisition of assets to $36,702,000. Appropriation financed operating expenses are estimated at $5,107,000.

CORPORATE FUNDS

The corporate financed obligations for 1956, summarized on page 3, are estimated at $179,559,000: capital additions, $29,220,000; expenses of operating programs and reimbursable services for other agencies, $143,461,000; and inventories, $6,878,000. Income is estimated at $248,329,000 of which $221,920,000 is from power. Repayments to the United States Treasury and retirement of bonds totaling $65,982,000 are budgeted for 1956. Power repayments made and budgeted through June 30, 1956, are 57 percent more than the amounts required to that date to provide for amortization of the repayable power investment over a 40-year period.

C. Statement of financial condition as of June 30, 1953, 1954, 1955, and 1956 (balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)

	1953 actual	1954 actual	1955 estimate	1956 estimate
ASSETS				
Cash:				
With Treasury and in banks	$341,106,408	$266,861,136	$116,984,233	$76,573,233
On hand	5,969	50,767	50,767	50,767
Total cash	341,112,377	266,911,903	117,035,000	76,624,000
Current receivables:				
Federal agencies	10,279,175	13,625,955	15,000,000	15,000,000
Power customers	5,980,615	6,293,101	7,500,000	7,500,000
Chemical products customers	1,399,895	1,425,270	1,500,000	1,500,000
Employees	33,592	35,269	50,000	50,000
Other	931,804	959,760	950,000	950,000
Total current receivables	18,625,081	22,339,355	25,000,000	25,000,000
Inventories:				
Power fuel	9,103,001	13,845,078	16,625,078	22,000,078
Other power materials and supplies	5,737,350	7,409,117	8,880,117	10,215,117
Chemical products manufactured and in process	2,498,077	2,234,471	1,414,472	1,274,472
Chemical raw materials and supplies	4,466,616	3,954,173	4,120,172	4,155,172
Test-demonstration fertilizer stored with ditributors	34,573	59,865	59,865	59,865
Materials and supplies for general use	583,097	533,982	533,982	533,982
Total inventories	22,422,714	28,036,686	31,633,686	38,238,686
Land, structures, and equipment:				
Multiple-use dams	718,751,458	730,896,088	737,799,000	746,452,000
Single-use dams	48,758,448	59,901,417	60,719,000	60,694,000
Steam production plants	227,126,662	346,400,808	689,034,000	860,384,000
Other electric plant	268,862,379	313,741,510	381,462,076	425,472,302
Chemical plant	35,228,331	36,506,034	35,420,000	35,934,000
General plant	20,821,731	19,268,877	20,459,000	21,459,000
Construction in progress	209,462,476	315,624,421	171,530,761	22,132,535
Investigations for future projects	616,974	872,713	1,194,759	1,607,759
Total land, structures, and equipment	1,529,628,459	1,823,211,868	2,097,618,596	2,174,135,596
Less portion charged off as depreciation:				
Multiple-use dams	81,152,221	90,357,397	98,598,000	106,908,000
Single-use dams	9,748,723	10,479,104	11,255,000	12,035,000
Steam production plants	21,127,545	28,163,105	41,539,000	62,914,000
Other electric plant	37,554,911	43,637,627	51,535,000	61,285,000
Chemical plant	12,715,298	13,857,082	13,328,000	14,392,000
General plant	7,711,491	7,029,013	7,890,000	8,740,000
Total portion charged off as depreciation	170,010,189	193,523,328	224,145,000	266,274,000
Net land, structures, and equipment	1,359,618,270	1,629,688,540	1,873,473,596	1,907,861,596
Total assets	1,741,778,442	1,946,976,484	2,047,142,282	2,047,724,282
LIABILITIES				
Current liabilities:				
Accounts payable:				
Federal agencies	6,728,375	6,561,941	6,000,000	5,000,000
Other	34,889,443	53,403,592	47,297,239	33,924,973
Employees' accrued leave	8,743,820	9,075,581	9,075,000	9,075,000
Unpaid payroll	2,110,753	2,676,192	2,000,000	1,500,000
Employees' savings bond collections	129,560	254,487	200,000	200,000
Accrued bond interest payable to U. S. Treasury	255,069	266,188	127,734	
Retirement system	306,716	346,970	300,000	300,000
Total current liabilities	53,163,736	72,584,951	64,999,973	49,999,973
Deferred credits	1,220,589	970,652	720,652	495,652
Contributions in aid of construction	279,720	303,344	308,344	313,344
Total liabilities	54,664,045	73,858,947	66,028,969	50,808,969

C. Statement of financial condition as of June 30, 1953, 1954, 1955, and 1956 (balances for June 30, 1954, are as certified under sec. 1311, Public Law 663)—Continued

	1953 actual	1954 actual	1955 estimate	1956 estimate
INVESTMENT OF U. S. GOVERNMENT				
Interest-bearing investment:				
Bonds held by U. S. Treasury	$34,000,000	$29,000,000	$14,000,000	
Non-interest-bearing investment:				
Appropriations by Congress	1,596,734,581	1,785,214,581	1,905,214,581	$1,932,764,581
Less repayments to U. S. Treasury	67,421,189	87,098,166	127,563,390	179,545,390
Net appropriations	1,529,313,392	1,698,116,415	1,777,651,191	1,753,219,191
Property transfers from other agencies	44,916,313	45,029,517	45,029,517	45,029,517
Net appropriations and property transfers	1,574,229,705	1,743,145,932	1,822,680,708	1,798,248,708
Retained earnings:				
Net income from power operations	225,773,288	253,914,245	302,909,245	361,000,245
Net expense of other programs	146,888,596	152,942,640	158,476,640	162,333,640
Total retained earnings	78,884,692	100,971,605	144,432,605	198,666,605
Total non-interest-bearing investment	1,653,114,397	1,844,117,537	1,967,113,313	1,996,915,313
Total investment of U. S. Government	1,687,114,397	1,873,117,537	1,981,113,313	1,996,915,313
Total liabilities and investment of U. S. Government	1,741,778,442	1,946,976,484	2,047,142,282	2,047,724,282

NOTE.—Contingent liability against appropriated funds for undelivered orders for construction materials and equipment, not included above, is as follows: June 30, 1953, $247,164,671; 1954, $121,179,281; 1955, $21,374,281; 1956, $7,434,281.

Selected working capital (other than cash with Treasury and in banks) included above is as follows: June 30, 1953, −$58,525,594; 1954, −$68,461,656; 1955, −$54,374,033; 1956, −$32,549,033.

SCHEDULE C–1.—*Repayment of investment in power program under provisions of the Government Corporations Appropriation Act, 1948*

Fiscal year	Minimum repayments required under 1948 law		1/40 of plant investment at end of previous year		Actual and budgeted payments [1]	
	Year	Total period	Year	Total period	Year	Total period
1948	$10,500,000	$10,500,000			$10,500,000	$10,500,000
1949	2,500,000	13,000,000	$8,705,981	$8,705,981	5,500,000	16,000,000
1950	2,500,000	15,500,000	8,705,981	17,411,962	5,500,000	21,500,000
1951	2,500,000	18,000,000	9,149,627	26,561,589	9,000,000	30,500,000
1952	2,500,000	20,500,000	9,733,970	36,295,559	12,000,000	42,500,000
1953	2,500,000	23,000,000	12,256,316	48,551,875	15,000,000	57,500,000
1954	2,500,000	25,500,000	17,482,476	66,034,351	20,000,000	77,500,000
1955	2,500,000	28,000,000	21,592,868	87,627,219	[2] 50,000,000	[2] 127,500,000
1956	2,500,000	30,500,000	[2] 31,424,781	[2] 119,052,000	[2] 59,000,000	[2] 186,500,000
1958		87,059,810				
1968		174,119,620				
1978		261,179,430				
1988		348,239,240				
1990		365,985,080				
1991		389,358,811				
1992		490,252,655				
1993		699,299,057				
1994		863,714,733				
1995		[2] 1,257,000,000				
1996		[2] 1,451,400,000				
1997		[2] 1,462,496,000				
1998		[2] 1,472,346,000				

[1] In addition to repayments under the provisions of the Government Corporations Appropriation Act, 1948, bond redemptions of $8,572,500 and other repayments of $15,059,019 were made prior to fiscal year 1948.
[2] Estimated.

UNOBLIGATED BALANCES

Mr. RABAUT. Page 4 of the justifications shows an estimated carryover of $14,259,000.

Is this an estimated unobligated balance?

Mr. WESSENAUER. Yes, sir; that is an estimate of the unobligated balance as of the end of 1955.

Mr. RABAUT. What is the present unobligated balance in appropriated funds?

Mr. WESSENAUER. I do not have that figure, sir, but I believe that our unobligated balance at the end of the fiscal year will likely be larger than the $14 million, because of delays in the delivery of some of the generating equipment.

So, we have not made the expenditures for its installation, but the money which will accrue and make the balance larger, as well as the $14 million balance, will be required in fiscal 1956 to install that equipment.

Mr. RABAUT. Can you supply this figure for the record to the best of your ability, as to some time and some date?

Mr. WESSENAUER. We can try to make an estimate, sir.

Mr. RABAUT. The question was: What is your present unobligated balance in appropriated funds?

Mr. WESSENAUER. Yes, sir.

Mr. RABAUT. That is, the money that is appropriated.

Is it apart from the money which you earn in your own operations?

Mr. WESSENAUER. Yes, sir.

(The information requested follows:)

The unobligated balance on March 31, 1955, was $88,111,458. This balance is to be used for carrying on construction and nonconstruction activities for remainder of fiscal year 1955; and for carrying on construction activities in 1956 deferred from 1955, largely because of delays in delivery of major equipment.

Mr. RABAUT. What unobligated balances in appropriated funds have been carried over on June 30 in each of the last 5 years, and what was the total appropriation for each of those years?

You may supply that information for the record.

Mr. WESSENAUER. Yes, sir.

(The information requested follows:)

Appropriations, obligations, and balances during the construction period of 7 large steam plants

	Appropriations	Balances		Appropriation obligations
		Brought forward	Carried forward	
1950	$61,041,650	$2,440,654	−$2,730,431	$60,751,873
1951	194,714,000	2,730,431	−850,191	196,594,240
1952	238,389,600	850,191	−25,132,250	214,107,541
1953	336,027,000	25,132,250	−15,974,362	345,184,888
1954	188,480,000	15,974,362	−52,266,056	152,188,306
1955	120,000,000	52,266,056	[1] −14,259,000	[1] 158,007,056

[1] Estimated in 1956 budget.

NOTE.—Balances carried forward usually result from variations in construction performance from that scheduled when estimates were submitted. Balances carried forward from any year are used, along with new appropriations, for carrying out the approved construction program scheduled in the following year

REPAYMENTS TO TREASURY

Mr. RABAUT. Page 5 of the justifications shows that $65,982,000 will be repaid to the Treasury and also includes bond retirement in 1956.

How does this compare with fiscal year 1955?

Mr. WESSENAUER. This year, sir, we will pay into the Treasury and retire bonds in the total amount of $55,465,224.

So that the budgeted figure for 1956 is about $10.5 million larger than for the current year.

Mr. PHILLIPS. Mr. Chairman, may I ask a parliamentary inquiry off the record?

Mr. RABAUT. Yes.

Mr. PHILLIPS. Off the record.

(Discussion off the record.)

POWER OPERATIONS

Mr. RABAUT. On the power program, we will insert pages 6, and 9 through 15 of the justifications.

(The pages referred to follow:)

Data on selected major projects

Data on selected major projects

Projects contributing to power supply	Fiscal year construction started	Nameplate capacity and service dates				Direct obligations				Administrative and general expenses, total project [1]	Estimated total cost
		To June 30, 1955		Fiscal year 1956 and later		Actual to June 30, 1954	Estimated				
		Capacity, kilowatts	Service dates	Capacity, kilowatts	Service dates		Fiscal year 1955	Fiscal year 1956	To complete		
Boone (3 units)	1951	75,000	March, June, September, 1953.			$26,825,011	$189,000			$413,989	$27,428,000
Fort Patrick Henry (2 units)	1951	36,000	December 1953; February 1954.			12,035,153	446,000			171,847	12,653,000
Additional hydro units:											
Pickwick 5 and 6	1950	72,000	October, December 1952.			8,958,490				165,798	9,124,288
Guntersville 4	1949	24,300	March 1952			4,576,983				101,721	4,678,704
Hales Bar 15 and 16	1950	48,600	July, December, 1952.			14,031,242	46,000			269,758	14,347,000
Hiwassee 2	1953			59,500	October 1955	4,185,806	1,846,000	$310,000	−$29,806	88,000	6,400,000
Cherokee 3 and 4	1951	60,000	January, October 1953.			5,419,035	50,000			70,965	5,540,000
Chatuge 1	1953	10,000	December 1954			1,978,442	968,000			33,558	2,980,000
Nottely 1	1953			15,000	October 1955	1,165,041	1,832,000	215,000	−63,041	51,000	3,200,000
Fontana 3	1951	67,500	February 1954			4,235,516	3,000			53,484	4,292,000
Douglas 4	1952	26,000	August 1954			2,823,655	354,000			40,345	3,218,000
Johnsonville steam plant (6 units).	1949	675,000	October, November, 1951; February, April, November, 1952; February 1953.			92,832,354	378,000	−543,000		1,074,646	93,742,000
Widows Creek steam plant (6 units).	1950	675,000	July, October, November, 1952; January, 1953; June, July, 1954.			89,961,859	2,289,000	101,000	48,141	600,000	93,000,000
Kingston steam plant (9 units)	1951	1,260,000	February, April, June, July, 1954; January, February, April, June, 1955.	180,000	November 1955.	160,565,890	29,847,000	4,250,000	277,110	1,060,000	196,000,000
Shawnee steam plant (10 units)	1951	1,215,000	April, June, October, 1953; January, October, November, December, 1954; February, June, 1955.	135,000	September 1955.	187,490,252	23,496,000	2,581,000	193,748	1,239,000	215,000,000

See footnotes at end of table, p. 158.

Data on selected major projects—Continued

Projects contributing to power supply	Fiscal year construction started	Nameplate capacity and service dates				Direct obligations				Administrative and general expenses, total project [1]	Estimated total cost
		To June 30, 1955		Fiscal year 1956 and later		Actual to June 30, 1954	Estimated				
		Capacity, kilowatts	Service dates	Capacity, kilowatts	Service dates		Fiscal year 1955	Fiscal year 1956	To complete		
Colbert steam plant (4 units)	1952	720,000	January, February, April, May 1955.			84,423,658	21,006,000	2,354,000	132,342	584,000	108,500,000
John Sevier steam plant (3 units).	1953	180,000	June 1955	360,000	September 1955; March 1956.	56,849,347	28,176,000	7,228,000	1,063,653	683,000	94,000,000
Gallatin steam plant (2 units)	1953			450,000	November 1955; January 1956.	45,256,324	28,949,000	9,369,000	740,676	685,000	85,000,000
Total projects contributing to power supply.						803,614,058	139,875,000	25,865,000	2,362,823	7,386,111	979,102,992

[1] Includes adjustment for budgeted income for fiscal years 1955 and 1956.

In the budget presented to the Congress for fiscal year 1955, no funds were requested to begin construction of additional generating capacity in anticipation of load growth through 1957. Instead, the budget program contemplated that the Atomic Energy Commission would be able to contract with another supplier for 600,000 kilowatts, beginning in 1957, to replace some of the power AEC is now under contract to purchase from TVA. Plans for accomplishing this have taken the form of arrangements by AEC for delivery of that amount of power by the Mississippi Valley Generating Co. (MVGC) to TVA near Memphis and TVA would deliver a corresponding amount to AEC at Paducah. Depending upon the extent to which such arrangements make capacity available before the end of 1957, the relationship then between capacity and requirements would be approximately as set forth below. Corresponding figures for the end of 1958 are also shown.

This table shows the relationship between capacity expected to be available and estimated demands at the end of calendar years 1957 and 1958.

End of calendar year	System capacity (kilowatts)		Presently estimated demands (kilowatts)	Margin for unforeseeable developments	
	Nameplate rating	Assured-load-carrying ability		Kilowatts	Percent of of load
1957	10,038,485	9,533,000 to 10,133,000	9,800,000	−267,000 to 333,000	−2.7 to 3.4
1958	10,050,485	9,543,000 to 10,143,000	10,600,000	−1,057,000 to −457,000	−9.9 to −4.3

A statement on power requirements follows:

No provision is made in the 1956 budget for beginning construction of new generating units and the system capacity figures used above include no TVA generating capacity beyond that which is already under construction. The figures anticipate installations during 1956–58 of units with nameplate rating of 186,000 kilowatts at Army dams on the Cumberland River and at Aluminum Company of America dams on the Little Tennessee River. The load figures include for Federal agencies only the amounts under contract, except for a scheduled AEC increase at Oak Ridge. This means that the estimated power requirements in the area do not include the several hundred thousand kilowatts of "extended load" at Oak Ridge and Paducah which AEC's installed equipment can use at any time, nor any provision for new or expanded power requirements of any other Federal agencies.

On these assumptions of capacity and load, a deficiency in power supply is in prospect in 1958. The deficiency may develop, beginning as early as the latter part of 1957, unless other means for obtaining funds are devised and authorized in the near future, or a supplementary request is made and additional appropriations are provided. TVA is undertaking studies of financing methods alternative to appropriations, and it is expected that requests for legislative action will be submitted to the Congress during the current session.

To provide for a margin at the end of 1958 comparable with that at the end of 1956 would require completion by the end of 1958 of approximately 1 million kilowatts (nameplate rating) in new capacity.

BASIS FOR ESTIMATES OF LOAD AND CAPACITY

Estimates of power requirements

The estimates of power requirements assume a continued expansion of the economy of the Nation and of the region with a relatively high level of industrial production.

Large and constantly growing amounts of power are used by the 148 municipal and cooperative electric systems which distribute TVA power to the 5 million people in the area they serve. Forecasts of their power requirements are based on a number of independent studies of factors which affect power use. These include studies of the appliances used and their effect on consumption levels. The trends of growth and seasonal variations are projected from past experience.

Existing and prospective requirements of commercial and industrial establishments served by the municipalities and cooperatives are reviewed.

A second group of loads is those of the few large industries served directly by TVA. Their requirements are forecast on the basis of information received directly from the consumers; for example, in connection with contract revisions and inquiries concerning proposed developments.

The third group consists of the loads of the atomic energy plants and other Federal agencies operating in the area. As noted above, no allowance has been made for possible further increases in such loads.

The power required to supply all these users was 5,411,000 kilowatts in January 1954. The presently estimated demand for the end of 1958 is 10,600,000 kilowatts. This includes requirements of the AEC projects at Paducah and Oak Ridge totaling 3,110,000 kilowatts and requirements of other users amounting to 7,490,000 kilowatts.

Estimates of load-carrying ability

Hydro and steam generating units are designed and manufactured to deliver their nameplate capacity under specified average operating conditions. Under favorable conditions the output can be increased above this designed capacity. The dependable capacity is determined by taking unfavorable conditions into account also. For example, high tailwater conditions resulting from floods have reduced available hydro capacity by as much as 400,000 kilowatts during winter periods when heavy system demands for the year were being supplied. Drawdown of storage reservoirs as a result of drought conditions such as have been experienced during recent years can reduce the output from the hydro system 500,000 kilowatts below its rated capacity. Operating reserves must be deducted from the dependable capacity to cover removal of units from service for scheduled or emergency maintenance; failure of units to perform as expected; capacity required under instantaneous load changes to maintain system stability, regulate frequency, and control loading on tie lines; and the effects of abnormal temperature or other weather conditions. The assured load-carrying ability of the system is the amount of load which can be supplied with reasonably reliable service under the circumstances that must be expected. As the system grows, TVA's allowance for operating reserves, as a percentage of the total dependable capacity, is gradually being reduced to about 8 percent—a lower figure than customary in the industry.

The comparison of the projections of load and of load-carrying ability shows the extent to which a margin is provided or a deficiency can be expected. The seriousness of any indicated deficiencies or the desirability of any margin should be appraised in light of the changes that develop in capacity installation schedules and in power requirements and the relative seriousness of a power surplus or a power shortage. Estimates made several years in advance are, of course, subject to a margin of error, since they involve judgments on uncertain future events. The estimates of load could prove to be either too high or too low. Past estimating experience indicates that facilities are often delayed by such factors as inability to obtain equipment on schedule. Also unexpected loads frequently develop. These factors result in reducing anticipated margins or changing margins into deficiencies. Deficiencies result in curtailment of service and revenues and necessitate the use of high-cost purchased power. These elements of cost could extend over a period of years depending upon how quickly the deficiency could be eliminated by additional construction. Either or both of these results of power deficiencies are likely to be far more serious and costly than having a margin of reserve which is temporarily above minimum requirements. However, the necessity of making load and capacity forcasts cannot be avoided, and past experience, combined with an analysis of current trends and conditions, must furnish the basis for the forecasts. The figures presented herein represent the best estimates of the TVA staff, all factors considered.

This table shows obligations for transmission system facilities.

	Appropriated funds	Corporate funds	Total
Estimated obligations, 1956:			
Direct:			
Primary transmission facilities	$7,420,000	$11,927,000	$19,347,000
Subtransmission facilities		7,022,000	7,022,000
Other transmission facilities		6,533,000	6,533,000
Total, direct	7,420,000	25,482,000	32,902,000
Indirect	290,000	2,502,000	2,792,000
Total, 1956	7,710,000	27,984,000	35,694,000
Estimated obligations, 1955	6,702,000	28,225,000	34,927,000
Actual obligations, 1954	15,576,132	25,032,032	40,608,164

Primary transmission projects to be started in fiscal year 1956 and estimated appropriated funds required for them in that year are:

Starting construction of transmission connections with the Mississippi Valley Generating Co. for transfer of 600,000 kilowatts of power for AEC	$6,500,000
Starting construction of transmission line (154 kilovolts) from Murfreesboro to the Arnold Engineering Development Center	920,000
Total direct obligations—appropriated funds	7,420,000

TRANSMISSION SYSTEM FACILITIES

Mr. RABAUT. Please explain the need for the new 154 kilovolt line to the Arnold Engineering Development Center, for which $920,000 is required.

Mr. WESSENAUER. That, sir, is the result of an increase in the power requirements of the Arnold Engineering Development Center, which is projected in the next few years.

They are presently under contract to take 318,000 kilowatts, and they are installing additional equipment, which will add another 70,000 kilowatts to their load, making a total of 388,000 kilowatts. You will note that there are two items. One is the item of $6.5 million for the start of construction of the transmission lines across the Mississippi River, to bring in the Dixon-Yates power. The other item of $920,000 is for starting construction of a transmission line from Murfreesboro to the Arnold Engineering Development Center.

The line is made necessary by the center's requirement for this additional amount of power, and if it is to be available by the time the center wants it, we should begin construction during the next fiscal year.

Mr. RABAUT. You were required by the Congress to finance from corporate funds the full cost of new transmission facilities requested in the 1955 budget. You show the table on page 2 of the justifications. You show in that table that $6,702,000 of appropriated funds will be used in 1955 for this purpose.

Are these funds carryover from 1954, or what is the story on this item?

Mr. WESSENAUER. Those are carryovers from the preceding year. In other words, we were unable to complete appropriated financed projects budgeted for fiscal year 1954 in that year, and the only work that is included in the category under appropriated funds for transmission facilities in the current fiscal year involve completion of those

projects, and the carryover of funds unexpended in the previous yea with which to do that work.

Mr. PHILLIPS. Off the record.

(Discussion off the record.)

Mr. RABAUT. Is there any reason why the transmission facilities program for 1956 should not be financed entirely from corporate funds?

Mr. WESSENAUER. Well, I believe if we are to increase payments into the Treasury and to maintain an appropriate reserve for con tingencies, we could not finance all of our future transmission necessarily, out of corporate funds.

Therefore, we have included in the appropriated fund item the request for $7,710,000 which is required in connection with the begin ning of work on these specific projects.

Mr. RABAUT. You feel that you should have appropriated funds for it?

Mr. WESSENAUER. Yes, sir.

ORIGINAL REQUEST FOR ADDITIONAL GENERATING CAPACITY

Mr. RABAUT. In view of the acknowledged need for additional generating capacity, either with or without the Dixon-Yates plant did you request funds for additional generating capacity in your original budget submission?

Mr. WESSENAUER. Yes, sir; the TVA did ask for additional genera tion capacity in its submission to the Bureau of the Budget.

Mr. RABAUT. What happened to the request? Did you appeal it or did you get it?

Mr. WESSENAUER. It was not granted, and it was appealed, and it was not granted following the appeal.

Mr. RABAUT. Then, for the record, what about the correspondence between the TVA and the Bureau of the Budget on this matter?

Mr. WESSENAUER. You would like to have that, sir?

Mr. RABAUT. Yes; I would.

Mr. WESSENAUER. I believe it can be furnished.

Mr. RABAUT. Do you have it here? If not, will you please place it into the record? I am requesting the correspondence between the TVA and the Bureau of the Budget on this matter.

Mr. PHILLIPS. Could some idea be given of that, or are we to see the letters? Could some idea be given as to what is in them?

Mr. RABAUT. We can see them when we get them. It is just the standard exchange of correspondence which we want. We do not want a lot of odds and ends.

Mr. PHILLIPS. Well, you see, that leads, Mr. Chairman, into the figures which will probably indicate some failure to estimate correctly in the past the power needs. Do you see my point?

Mr. RABAUT. Do you have any objection to them going in?

Mr. PHILLIPS. Not a particle; I think they ought to go in.

Mr. RABAUT. All right; fine.

(The information requested follows:)

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., September 15, 1954.

Hon. ROWLAND R. HUGHES,
Director, Bureau of the Budget,
Executive Office of the President,
Washington 25, D. C.

DEAR MR. HUGHES: We submit herewith TVA's budget program for the fiscal year 1956. We believe this program is in accord with the budget policies described in your letter of July 23, 1954.

Funds required to finance the 1956 program would be derived as follows: An appropriation request of $95,835,000; funds provided by operations of $247,402,000; and a decrease in United States Treasury cash of $6,246 000. Of the $349,483,000 thus provided, $111,109,000 would be used for expenditures for acquisition of assets; $147,425,000 for operating expenses; $19,967,000 for increasing working capital; and $70,982,000 for retirement of bonds and repayments to the United States Treasury in accord with section 26 of the TVA Act. This latter amount of repayments from revenues is equivalent to about three-fourths of the appropriation request.

Net income from power operations is estimated at more than $59 million in 1956, representing a 4-percent return on the average net investment in power facilities. Repayments from power proceeds of $64 million in 1956 will bring the total repayment of power investment to $215 million. When the 1956 payment is made, TVA will be 60 percent ahead of an average payback schedule under the 40-year plan established by law.

THE APPROPRIATION FUND BUDGET

A new appropriation of $95,835,000 is proposed for fiscal year 1956. This amount, with an estimated balance of $14,259,000 to be carried forward from the current year, totals $110,094,000, which will be applied as follows: Obligations for acquisition of assets, $103,374,000; operating expenses, $6,720,000. Not since fiscal year 1950 has the estimated requirement for appropriated funds been as low as the estimate for 1956.

The 1956 estimate for power generating and transmission facilities is $92,575,000 The budget program provides $25,865,000 for continuation of work on 2 hydro generating units and 6 steam generating units now under construction; $59 million for beginning the installation of 6 steam generating units at 3 existing projects; and $7,710,000 for transmission system facilities.

The new units proposed are John Sevier unit 4, Johnsonville units 7–10, and Gallatin unit 3. These units are those that can be installed and operated to supply system loads at lowest cost.

Generating facilities now under construction by TVA will add 1,199,500 kilowatts of capacity (nameplate) to the TVA system in fiscal year 1956. No additional TVA capacity is now under way. By the end of calendar year 1957 it is estimated that regional power demands will be 9,800,000 kilowatts. The assured load-carrying ability of the TVA system will then be from 9,533,000 to 10,133,000 kilowatts, depending upon the extent of completion of arrangements for delivery of 600,000 kilowatts of power over the TVA system to the Atomic Energy Commission by a private supplier. If these arrangements are not completed, a shortage will result. Even if they are completed and the full supply of power is available before the end of 1957, a margin of only about 3 percent is indicated which is small in comparison with normal utility standards.

The installation of six generating units at existing projects, as provided in the 1956 budget program, would improve the balance between power supply and requirements to some extent at the end of calendar year 1957, with the full capacity becoming available in 1958. A deficiency in power supply would be made improbable, but there would still be practically no margin if there is delay beyond 1957 in the delivery by the private supplier of all or a part of the 600,000 kilowatts for the AEC. If the contemplated arrangements for that supply are fully completed before the end of 1957, the margin for unforeseeable developments will then be 6.8 percent. By the end of 1958, when demands are expected to reach 10,900,000 kilowatts, this margin will be reduced to about 5 percent, an undesirably low level for efficient management of a power system. Any significant upward change in the power demands of Federal agencies above the known loads now taken into account would wipe out this small margin.

The Board has given serious consideration to the urgency requiring a start on construction during fiscal year 1956 of additional units in the steam powerplants

at Johnsonville, John Sevier, and Gallatin. It has reviewed the computations and estimates involved in forecasting needs and is of the opinion that the methods are sound and the basic data correct. It has been noted that the forecasts result from assumed firm demands by AEC and other Government agencies and services, and from projections of growth and developing needs in the case of industry and residents of the area.

Such forecasts necessarily involve some elements of uncertainty. If industrial production should prove to be at a somewhat reduced level in 1957 and 1958, or if, contrary to past experience, few new power needs develop beyond those presently anticipated, a smaller margin would prove to have been adequate and the additions to Johnsonville alone might be sufficient. With reasonable forewarning, any deficiencies during the winter peak-load seasons that might result with installation of only the Johnsonville units conceivably might be met by bringing in higher cost power from other sources. It might be possible to complete the John Sevier and Gallatin additions in time for the 1958 peak demands even if they were not started in the 1956 budget program.

On the other hand, more capacity than included in the proposed budget would be highly desirable if other possible conditions should develop. The AEC might find it necessary, as at present, to operate at a higher level of load than provided for in its power contracts. Further expansion of AEC or AEDC facilities or any other new power demands in excess of present estimates, especially if required by the defense program, would make the availability of greater generating capacity of extreme importance. The penalties of any inadequacies of capacity would be magnified if the drought of the last few years continues or worsens. Delays in manufacture of turbines and boilers, experienced on all recent units, add seriously to the risks of any deferral of equipment orders.

After considering the range of possibilities, we have developed and are recommending the proposed program as being the most prudent alternative, in our judgment. The possibility of deferring any unit should be contemplated only if it is considered exceedingly important to reduce budgetary obligations even more sharply than we have assumed.

Thus it would be to take a calculated risk to defer construction of additional units at John Sevier and Gallatin until a subsequent fiscal year. All members of the Board concur in this, but two members believe that the risk of failing to provide a minimum margin is too great to incur. The chairman feels, on the other hand, that the risk is so relatively small and timely action in the future would so serve to further minimize it, that the 1956 budget could justifiably be limited to commencing construction on units 7, 8, 9, and 10 at the Johnsonville plant, deferring additions to John Sevier and Gallatin until the need has been more definitely established.

Transmission system facilities would require $7,710,000 in 1956, including $7,420,000 in direct obligations. Of this estimate, $6,500,000 is for beginning construction of facilities for receiving 600,000 kilowatts for transfer to the AEC. The remaining $920,000 will be used for beginning the construction of a transmission line for service to the Arnold Engineering Development Center.

The 1956 construction program includes only 1 new major water-control structure, a navigation lock at Wilson Dam to replace 3 outmoded, substandard-size locks. Funds have been requested before for this facility, but so far have been allowed only for design work. Tennessee River traffic is growing rapidly. Between 1945 and 1953 traffic through the Wilson locks rose from 452,000 to 1,580,000 tons. At the rate of traffic increase now anticipated, the practical annual capacity of Wilson lock—2,400,000 tons—will be reached by 1958. If a new lock can be built, it is expected that traffic past Wilson Dam will exceed 3,100,000 tons in 1963. If a new lock is not provided, full use of the investment in existing navigation facilities on the Tennessee River cannot be realized.

Appropriated fund requirements for operating expenses are $6,720,000. While this is above the estimate for 1955, the difference does not reflect any major increase in program activities. It is due primarily to a difference in the method of financing resource development in 1955.

In both 1954 and 1955, funds available for resource development were reduced sharply from actual expenditures of earlier years. The resource development activities of TVA have been kept under careful review during the past year. This review shows that it is in the national interest to continue these activities, and that a modest increase in the level of expenditure is necessary to conduct them effectively and to bring some of them to an orderly conclusion in the next few years. These points are brought out in greater detail in the TVA budget justification document.

By specific provisions in the 1954 and 1955 Appropriation Acts, TVA was directed to finance resource development activities in part from corporate funds. We believe that TVA's resource development activities should be financed from appropriated funds except to the extent that TVA derives corporate proceeds through sale of products incidental to these activities. They are noncommercial operations of an educational and demonstrational nature. While their immediate value is regional, as the TVA Act of 1933 contemplated they should be, they are also performed in the general interest of the country at large. Their benefits, both direct and indirect, extend beyond the region. They are in the nature of traditional Federal functions performed by TVA on a regional basis. They relate to the development of agricultural resources, of forests, and of small watersheds. They include the mapping of the area in cooperation with the United States Geological Survey.

Section 26 of the TVA Act, as amended, does not provide for financing these general activities from corporate funds. The use of TVA proceeds is restricted to the commercial-type programs that produce them. Only through temporary amending legislation in the appropriation acts has it been possible for TVA to use corporate funds to finance general resource development.

For these reasons we again provide in our 1956 budget program for financing resource development from appropriated funds except for a small amount that can be financed from corporate funds in accord with the provisions of the TVA Act, as amended.

The above comments with respect to financing resource development activities represent a majority Board opinion; however, the new Chairman of TVA, responsive to conference report (to accompany H. R. 8583, 83d Cong., 2d sess., Rep. No. 1882), has given such careful consideration as time has allowed to the resource development activities program and has determined that it can be financed in the future from other than appropriated funds, being mindful that as previously stated, temporary amending legislation in the appropriation act will be necessary. He recommends that nonpower proceeds be used for this purpose in 1956 but desires to reserve opinion as to disposition of the financing in future budgets.

Other operating programs financed from appropriated funds are planned at about 1955 levels and are described in detail in the budget justification.

We again recommend that the limitation on travel expenses contained in our 1955 appropriation language be eliminated. We are convinced that such limitations, however well-intentioned they may be, do not save money when applied to TVA. In the long run they may result in a waste of money by forcing us to choose more expensive ways of getting necessary work done in order to avoid expenses for travel.

THE CORPORATE FUND BUDGET

Corporate income is estimated at $247,455,000, of which $221,145,000 would be from power operations. Expenditures from corporate funds are estimated at $174,965,000, consisting of $29,240,000 for capital additions; $140,705,000 for expenses of operating programs and reimbursable services for other agencies; and $5,020,000 for inventories. Payments to the United States Treasury and retirement of bonds would total $70,982,000. The estimated payment from power proceeds of $64 million will be the largest annual payment ever made by TVA.

Very truly yours,

HERBERT D. VOGEL, *Chairman of the Board.*

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington 25, D. C., December 1, 1954.

Hon. HERBERT D. VOGEL,
Chairman, Board of Directors,
Tennessee Valley Authority, Knoxville, Tenn.

MY DEAR GENERAL VOGEL: Your budget estimates for the fiscal year 1956 and the information presented by your representatives from the Tennessee Valley Authority have been given careful analysis. The President has approved the inclusion in the budget of the following recommendation for your agency's appropriation: Payment to Tennessee Valley Authority Fund, $27,450,000.

On the basis of the information furnished us, and after taking into account the arrangements between the Atomic Energy Commission and the Mississippi Valley Generating Co., the generation now scheduled for the TVA system will provide, during the 5-year period from 1953 to 1958, an increase of more than 80 percent in the assured capacity for loads other than those of the Atomic Energy Commission. In view of past experience this substantial increase would appear

to make adequate provision for reasonable load growth. This increased capacity would be augmented by whatever power TVA can continue to purchase in the future from outside sources. Moreover, additional generating capacity at existing plants could, according to the information presented to us, be installed in a period of less than 3 years. Therefore, in the light of the overall budgetary problems confronting the administration, the 1956 Budget will make no provision for starting construction of additional power generating units. In the event that conditions change during the next year warranting reconsideration of this decision, appropriate budgetary action will be taken.

The recommendation includes $400,000 for resource development activities. The budget contemplates that additional funds in the amount of $600,000 will be applied to these activities from proceeds of operations of the Tennessee Valley Authority.

Our advice on the draft legislation submitted by you with respect to charging interest on the power investment of the Tennessee Valley Authority is being made the subject of a separate letter.

Members of the Bureau of the Budget staff will communicate with your budget officer concerning the appropriation text, the narrative statement, and other details relating to the above amount. Please have your budget officer revise the details for 1956 in the schedules of obligations to agree with the approved estimates. In addition, obligations or other transactions reported for 1955 should be revised, if necessary, to reflect significant changes in your financial plans. It will not be necessary to prepare new green sheets or narrative statements unless it is impracticable to make revisions on the original presentation. The revised schedules should be returned not later than December 3, 1954.

The recommendations of the President, the estimates submitted, and any other information used in the formulation of these recommendations are to be kept confidential until the budget message is presented to Congress, except that in those cases where the Bureau of the Budget releases estimates to the committees on appropriations prior to that time, the estimates may be discussed with members and staff of those committees. In such cases you will be advised before the estimates are released.

Sincerely yours,

ROWLAND HUGHES, *Director.*

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., December 6, 1954.

Hon. ROWLAND R. HUGHES,
Director, Bureau of the Budget,
Executive Office of the President,
Washington 25, D. C.

DEAR MR. HUGHES: I transmit to you the following appeal from my colleagues on the TVA Board for restoration of a part of the funds eliminated from our 1956 budget request. My personal views are expressed at the end of the appeal letter.

We have received your letter of December 1, 1954, informing us of the Bureau's allowance in connection with TVA's budget request for 1956. Your letter provides appropriated funds of $27,450,000, a $68,385,000 reduction from our budget request of $95,835,000. We have also been advised by the Bureau of the Budget staff of the details applying to the allowance.

The program and estimates submitted to you in September 1954 represented the result of careful consideration and review of TVA requirements for 1956 in the light of the budget policies set out in your letter of July 23, 1954. We are also mindful of the overall budgetary problems facing the country, but the reduction in appropriated funds represented by the allowance letter, amounting to more than 70 percent, is so drastic and would have such serious consequences that we are compelled to appeal for reconsideration. We are confining our appeal to the minimum number of items which seem to us to be essential if TVA is to fulfill its statutory responsibilities. These are: The restoration of part of the proposed power capacity to be started in 1956; restoration of the estimate for the development of river transportation; and the restoration of part of the estimates for flood control, multipurpose reservoir operations, fertilizer and munitions development, and administrative expenses.

We request that the total allowance be increased from $27,450,000 to $58,250,000, an increase over the Bureau allowance of $30,800,000, but $37,585,000 less than our original request. The increase would provide $30 million for starting construction in 1956 of 540,000 kilowatts at the Johnsonville steam plant, and would restore $800,000 of the $1,825,000 reduction in the appropriation

financed program and administrative and general expenses. The revised allowance we are now requesting is substantially less than the $65 million in proceeds which TVA is expecting to pay into the Treasury in fiscal year 1956.

As stated in our letter to you of November 10, 1954, the TVA Board is giving immediate and serious attention to the possibilities of financing future expansion of the TVA power system by means other than appropriations. For the reasons described in our letter, the problem is of such importance and complexity that time is required if we are to arrive at an answer which will be workable and will serve the long-run interests of the valley region and of the Nation. Achieving a satisfactory solution will, of course, require the advice and participation of the representatives of the region, and particularly the 148 municipal and cooperative power distributors who have invested $400 million of their own money as partners in the regional power system. Until we are able to formulate a workable plan it is important that TVA be provided with the necessary appropriations to add generating capacity to its system for meeting the region's power needs. As we read the President's letter of November 10, 1954, to Representative W. Sterling Cole, which was released to the press, the President recognized that generating capacity should be provided to meet the power needs of the citizens of the valley while the role of the Federal Government in financing new power capacity is being considered.

The 1956 budget as presently approved by the Bureau of the Budget provides no additional capacity to meet the estimated loads in the winter of 1958–59. As we indicated during our budget hearing in October, we feel strongly that prudent management of the power system would require starting during fiscal year 1956 the installation of additional generating capacity to provide a margin of several hundred thousand kilowatts over presently projected 1958 loads. The 1956 budget as presently approved by the Bureau of the Budget fails by about 500,000 kilowatts to provide enough capacity even to meet the estimated loads.

We appreciate that overall budget considerations may prevent reaching desirable objectives, but certainly we should not be planning our power program so as to project a deficit. We believe the minimum program dictates starting at least the four Johnsonville units. The capacity thus provided, together with the power to be supplied for AEC from the Dixon-Yates plant, would barely meet the projected needs in 1958.

At present the power TVA is able to deliver to AEC and large industrial users of power is roughly half a million kilowatts less than they could use. At the same time TVA is importing roughly half a million kilowatts that happen to be available from other power systems. This amount of power loads the transmission interconnections, and more could not be delivered to TVA even to meet a national emergency. The imported power is of uncertain availability, with wide fluctuations from month to month and year to year. These facts show that it would be highly desirable if TVA's capacity were a million kilowatts greater today, in order to provide with reasonable assurance for the operation of the power using facilities built or under construction by the people and the Federal agencies in the area.

Even if it were possible to struggle through a power shortage in 1958, it could only be done at heavy cost—cost borne largely by the Government as the owner of the TVA system and as the user of about half of TVA's power output. Today the use of high cost marginal power sources is costing the area's major power consumers, principally AEC, approximately a million dollars a week above normal rates, besides reducing the return on the TVA investment. It is fortunate that in 1956 the relation of power supply to demand in this region will be much improved. At least part of those gains should be maintained by installing capacity in 1957 and 1958. Appropriations invested in a minimum program—the Johnsonville units—for keeping capacity approximately abreast of probable demands can be expected to yield larger dividends in avoidance of wasteful operation of high-cost plants than almost any investment the Federal Government could make.

Our request for appropriation financed program expenses and administrative expenses was $7,897,000. The indicated Bureau allowance of $6,072,000 for these items represents a reduction of $1,825,000, or 23 percent below the amount requested. The requested restoration of $800,000 of the Bureau of the Budget reduction of $1,825,000 for continuing these activities—navigation operations, flood control operations, multipurpose reservoir operations, fertilizer and munitions development, and administrative services—is in our opinion the minimum restoration required to enable TVA to conduct such activities at a level consistent with TVA's statutory responsibility and with reasonable effectiveness.

The attached statements detail the bases for these recommendations and present our views on the comments contained in the allowance letter.

Although we are not requesting the restoration of funds for constructing a new lock at Wilson Dam, we feel we must again emphasize the need for early correction of the serious bottleneck which is fast developing at this strategic point on the river channel. For the past 2 years we have proposed the construction of a new lock at Wilson Dam to replace the existing outmoded facilities. Our budget request for 1956 again included funds for starting this construction. This would have allowed initial operation of the new lock in 1958, the year in which we estimate the traffic at the Wilson locks will reach the practical locking capacity. Actual traffic in calendar year 1954 will exceed that estimated in the September 1953 planning report by 20 percent, and it seems likely that the existing locks will become a bottleneck even sooner than we had anticipated. Although we have no firm basis for judging the relative needs of the new Wilson lock as compared with navigation improvements on other rivers, the benefit-cost ratio for the new Wilson lock is roughly twice as great as those published for lock and dam No. 8 on the Warrior River and the Greenup and New Cumberland locks and dams on the Ohio River.

In addition, we pointed out during the hearing in October that failure of the old operating mechanisms could occur which would put the locks out of service and result in serious interruptions to traffic. We have also found that extensive cracking has taken place in the river wall of lock No. 2. The necessity of providing for increased traffic, and the danger of structural and mechanical failure which increases every year, make early correction of these conditions essential. The Bureau allowance permits continuing design of the new lock, and we hope that funds for construction will not be delayed beyond 1957.

The above comments and the attached statement reflect the views of a majority of the Board of Directors but depart in some instances from those of the Chairman who believes that the Tennessee Valley Authority, in order to meet its full obligation to the people of the United States, must prepare, as a power producer, to stand more fully by itself, and, as an administrator of government functions, to develop on the one hand an eagerness in the people of the region to accept greater responsibilities, and on the other a greater degree of coordination with other government agencies that they may gradually assume in this region the functions traditionally carried out by them in other parts.

Taking the power question first: On the assumption that the Dixon-Yates plant will be built at West Memphis to be producing 600,000 kilowatts of electrical energy by the end of 1958, there will be an assured capacity in the TVA system of 10,143,000 kilowatts at that time. Against this is a contemplated demand load of 10,600,000 kilowatts. Thus, for about three months at the end of 1958 and the beginning of 1959 there may be a deficiency, if additional units are not built for the Johnsonville, John Sevier, and Gallatin plants—and if nothing else is done—of about 450,000 kilowatts.

On the other hand, if the Board of Directors of TVA and its staff will move promptly to devise a new system of self-financing—and if the Congress will act promptly to approve a request along that line—it should be possible to get the additions to existing steam plants started in time to have them producing power at the end of 1958 in amounts necessary to meet the demand.

Failing that, there would still be the possibility of starting the additions with funds appropriated in fiscal year 1957 and getting upward of 330,000 kilowatts additional on the lines by the end of 1958. Since TVA is now purchasing about that same amount from AEC and private sources, it should be able to ride over the emergency period.

All of these conjectures rest upon a number of uncertainties. On the one hand, the demand load of 10,600,000 kilowatts is an estimate that is considered generous and may not be reached, in which case the system may provide adequate power with no additions at Johnsonville, John Sevier, and Gallatin. On the other hand, there may be an unexpected demand by AEC, or the MVGC plant might not be built, in either of which case it would be necessary to take prompt steps to meet the anticipated shortage.

The chairman admits that it would be convenient to have the additional power at the end of 1958 that can be generated by additional units at Johnsonville, and additional power from John Sevier and Gallatin would put TVA on "easy street" to the point that self-financing might not have to be considered for several years. He believes, however, that every effort should be made, beginning now, to avoid placing additional burdens on the taxpayers through appropriations, and he recommends therefore that action be deferred on appropriations for new starts at Johnsonville, John Sevier, and Gallatin, as proposed by the Bureau of the Budget, until the situation can be carefully examined at a later date when more information may be available.

As to reduction of appropriations for navigation operations from $272,000 to $31,000, the chairman feels that this is very much in order. While TVA has according to law the responsibility for unified development of the Tennessee River and its tributaries, the development has now been largely accomplished. Insofar as navigation is concerned the Corps of Engineers is operating and maintaining both the locks and the channel. They are also keeping commercial statistics. In the opinion of the chairman, the work done by TVA in connection with navigation can be suspended for a year without harm to anyone, or picked up by cushioning within the Engineering Division, and meantime it can be determined what part if any can be delegated to another agency. It is believed that TVA's legal responsibility can be properly discharged by seeing that necessary things are done—by whatever agency, and without duplication. Moreover, care should be taken to avoid doing things here that are not properly nor normally done elsewhere.

These same comments apply in general to the $55,000 reduction in flood control appropriation. This is not necessary or essential work, and it is not duplicated in other parts of the country.

While not opposing the majority board opinion on restoration of cuts against multipurpose reservoir operations, the chairman does not believe that the proposed cuts would extend to vital functions. This same comment applies to cuts directed against the fertilizer and munitions program.

The remaining cuts appealed by the majority of the Board relate primarily to administrative and general expenses and here the Chairman concurs with the Bureau that reductions can be properly made. The work of the Government relations and economics staff is of such esoteric nature that it could properly be done by a management division as a sideline to practical investigations designed to improve the efficiency of the entire TVA organization. Such a group should act as staff advisers to the Chairman of the Board, who in turn should have his responsibilities defined by law whereby he would become the executive head of the organization to dispatch details of business in accordance with broad general policies determined by the Board. This would parallel the method by which successful businesses are conducted.

A separate letter proposing legislation along this line is being submitted.

Cuts in personnel and technical information would follow normally from the recommended cuts in activities previously discussed, and could be sustained at least through the fiscal year. By fiscal year 1957, a better determination can be made as the result of detached and unbiased management studies conducted under the Chairman of the Board.

The Chairman does not disagree with decentralization of operations in any organization. On the contrary he strongly favors decentralization as a general principle. He does feel, however, that top management cannot pass off its responsibilities to lower operating groups and rely on those groups to report upon their own efficiency of operations. Coordinated control is necessary at the top level to insure that policies are being carried out and that all operations are conducted with maximum efficiency. Moreover, every organization needs a directive head to take executive action as needed to see that Board policies are complied with. This should be the function of the Chairman as executive head. Working with the General Manager, he could then dispatch the multitudinous details now requiring combined action by the Board.

Sincerely yours,

HERBERT D. VOGEL,
Chairman of the Board.

EFFECTS OF BUREAU OF THE BUDGET ALLOWANCE LETTER, FISCAL YEAR 1956

POWER CAPACITY

Capacity increases now underway are not sufficient

The allowance letter notes that the capacity additions now scheduled for the TVA system will provide during the 5-year period from 1953 to 1958 an increase of more than 80 percent in the assured capacity for loads other than those of AEC. The letter goes on to say that in view of past experience this substantial increase would appear to make adequate provision for reasonable load growth.

We believe that it is not enough to look at the additional capacity that is being provided. It is necessary to consider what the total supply—old and new—will be in relation to the load. However, we wish to point out that the general loads of the area—the residential, commercial, and industrial loads—are estimated to

increase 84 percent from 1953 to 1958 and that a review of past experience shows that the increase during the preceding 5 years was approximately 92 percent.

Plans should not be based on recurring power shortages

The 1953 capacity was far below the level required to carry the TVA loads or to operate the power system efficiently. It was necessary to import power from other systems, some of it at very high cost. It was necessary to operate the old and expensive plants on the TVA system. It was also necessary to curtail heavily the operations of industrial power consumers. All of these measures for meeting loads were expensive, both to TVA and its power customers.

It would not be prudent to plan on importing large amounts of power in 1958. Power from surrounding systems cannot be considered a substitute for additional capacity on the TVA system. The capacity on other systems is dedicated to their own loads and only such surpluses as may be available from time to time can be exported. The economical plants of other systems are needed for their own loads and any surplus is from the older high-cost plants. No power system can function effectively in dependence upon the unpredictable availability from other systems of power which, when available at all, must come from generating sources that range from marginal to obsolete. The occasional use of high-cost power, and the occasional curtailment of some loads, are steps to be taken under exceptional circumstances. Sound plans for the future cannot be based on the regular use of such devices. Sound rate structures should reflect occasional limited use of high-cost sources in emergencies but not their regular use. Some industrial power contracts can provide for limited curtailments, but very large amounts of power could not and have not been sold on the assumption of frequent unavailability of power.

Prospective deficiency in 1957

The estimated load for December 1957 is 9,800,000 kilowatts. The capacity now under construction by TVA, plus the capacity that it is hoped can be built by the Corps of Engineers on the Cumberland River and by the Aluminum Company of America on the Little Tennessee River, would provide an assured load-carrying capacity of 9,533,000 kilowatts. The indicated deficiency would be 267,000 kilowatts.

It was to eliminate this deficiency—originally estimated to be somewhat larger—and to provide at least some small margin that the Bureau of the Budget recommended the Dixon-Yates arrangements. As it develops, however, even if construction of the Dixon-Yates plant were to begin tomorrow, it would not be likely to provide any power for use in 1957.

Experience indicates that the construction of the Dixon-Yates plant would require more than three years, especially considering that no compensation is provided for overtime work and no penalties would be incurred for delays. The only guarantee is of 100,000 kilowatts of interim power which would not be delivered until January 1958, or later than that if the contracts do not become effective until after the end of this year.

Johnsonville addition would begin to be effective in 1957

One advantage of the four Johnsonville units as a minimum program to start during the coming session of Congress is that it is probable that one of them could be in operation before December 1957.

Delay of a year would be unduly hazardous

The allowance letter notes that additional generating capacity could be installed at existing plants in less than 3 years. This is generally true. However, if funds are not provided during the coming session of Congress, the time available for adding units will not be 3 years. The practical result will be to delay the beginning of installation of new units until July 1956. Even assuming that a deficiency appropriation might be provided early in 1956—and our experience has been that both the Bureau of the Budget and the Congress are reluctant to consider deficiency appropriations—construction could start but little earlier. Therefore, capacity not started during the coming session of Congress would need to be installed in 2½ years or less to be effective during the latter part of 1958. The equipment manufacturers are in better position to build the new units now on a fast schedule: however, there is no assurance that this condition will prevail if the start is delayed a year. The recent slackening of orders for new generators and turbines is now being reversed, and as new orders come in, delivery promises will tend to be extended.

In addition to the question of the practicability of construction of new capacity on shorter than normal schedule, there is the further consideration of the extra

costs of construction if it should prove necessary to use abnormal overtime and other costly means of expediting construction.

We have reviewed our experience with all the units on which construction began during the last 4 years and which are now completed or close to completion. The average construction time for the units involved in the new steam plant starts is 37 months. The average time for adding units to existing steam plants is 32 months. All these units were being installed under rush schedules with the assistance of AEC-sponsored priority ratings.

In summary, the likelihood of any substantial change in the present prospects of heavy power deficiencies in 1958 is very remote and the risks and costs of any delay would be great.

No provision is being made to supply additional power AEC could use with existing facilities

In light of the rejection of the larger program that we requested, we do not ask that enough capacity be started now to provide a margin above the anticipated loads in 1958, but we would be remiss if we did not mention again that our load estimates do not provide for operation of the AEC projects at a level in excess of their design capacity. By operation at extended load, those facilities will be able at any time to use some 500,000 kilowatts more power than the amounts assumed in our load forecasts. At the present time, the AEC facilities that have been completed are operating at higher than design capacity, and we have no reason for assuming that they may not do so in the future.

The Atomic Energy Commission is today using large amounts of power which can be supplied only at much higher prices than would be the case if we were able to maintain a reasonable margin of generating capacity over projected loads. The additional power generating units would be fully paid for from the savings such units would permit. Although at any given time the tightness of power supply and consequent high costs to AEC for interim and supplemental power have appeared to be due at least in part to emergency factors, as a practical matter this situation has become chronic. It is true that the present loads of AEC are greater than anyone knew 3 years ago that they would be. We have urged annually, however, that some margin of generating capacity be provided to help keep situations like the present one from developing. We consider it equally desirable to provide such margins for 1957 and 1958. Furthermore, it should be recognized that we will then face not only the possibility of loads now unforeseen, but the prospect of extended operation by AEC of power-using equipment which is now in existence.

AEC has not been prepared to contract for power in future years for its extended loads. Other power users in this area will be contracting from time to time to buy the available power. If it then develops in 1957 or 1958 that AEC wants to operate at extended load, the cost to the Government of the necessary power will be very much higher than if some margin of capacity were being provided.

APPROPRIATION FINANCED PROGRAM EXPENSES AND ADMINISTRATIVE AND GENERAL EXPENSES

Navigation operations

The TVA budget program for 1956 as presented to the Bureau included an estimate of $272,000 for navigation operations, one of the principal responsibilities delegated to the board of directors by the TVA Act. This estimate provided for engineering and research for the development of river transportation, the operation of public-use river terminals, and the cost of power required for lock operations. The Bureau indicated that the reduction here might be accomplished by eliminating the $241,000 estimated for work on development of river transportation. This would leave only $31,000 and would result in the virtual elimination of a statutory program.

The TVA Act provides for the unified development of the Tennessee River and the other resources of the Tennessee Valley region. Navigation operations are an essential part of the unified program. Construction of the navigable channel of the Tennessee River has been completed for present traffic but this does not conclude TVA's navigation responsibilities nor render navigation operations unnecessary. The channel and navigation facilities must be constantly improved to meet the needs of expanding commerce; markers on secondary channels and maps of the mainstream reservoirs must be maintained; capital improvements must be planned as needed; structures proposed by private industry across or along the river must be reviewed in accordance with the requirements of section 26a of the TVA Act; the day-to-day needs of navigation must receive consideration in the

regulation of streamflow; and the optimum use of the navigation channel must be made possible through engineering and economic studies and analyses of those factors which affect the contribution of this waterway to the economic vitality of the region and the Nation. These functions can only be carried out effectively as part of TVA's overall operations and it is therefore necessary that TVA maintain a small staff of experts in the field of navigation.

The navigation investment in the Tennessee River of approximately $155 million was authorized by the Congress for the purpose of strengthening the national economy by providing a modern waterway connecting the Tennessee Valley with the other great regions of this country. This investment will serve the function for which it was authorized only if it is used, but it is a new resource which will be used only as the people learn of the opportunities which it provides. The small TVA staff performs an essential function in identifying these opportunities and furnishing to prospective shippers the information necessary to take advantage of them. Direct outgrowths of this work are new industries such as the grain elevators which are springing up at the Tennessee River ports and which afford new economic opportunities to the grain producers of the Midwest by providing a new and expanding market for their surplus grain.

The cost of this program is small but the benefits to the national economy are large. TVA's navigation operations must be continued if these benefits are to continue and expand.

Flood-control operations

The Bureau's indicated allowance of $166,000 for flood-control operations is $55,000 below the TVA estimate of $221,000. This reduction will have a serious effect on work on local flood-control problems.

In line with the national trend of reducing Federal expenditures for local projects which more appropriately should be financed at the State or local level, TVA is advancing a new approach in dealing with local flood-control problems. The purpose of this program is to generate greater awareness and sense of responsibility on the part of the States and local communities in solving their flood problems with their own resources. Every community which suffers from floods can take action to reduce or prevent encroachments in flood hazard zones, thus reducing damage, and in many cases construction of protective works is within the financial capability of the communities involved. The ultimate goal is both to reduce flood damages, and to accomplish this result in such a way as to relieve the financial burden of the Federal Government for the construction of flood protective works. The method employed is to provide for local communities, as they request it, information as to flood heights which may be expected, together with a minimum of technical assistance, so that their engineers, assisted by appropriate organizations of the State, may prepare their own plans for such flood protection works as may be justified. The reduction proposed by the Bureau will retard the execution of this important and timely program.

Multipurpose reservoir operations

The budget submission for 1956 included an estimate of $3,927,000 for multipurpose reservoir operations, of which $2,211,000 was to be financed from appropriations and $1,716,000 from corporate funds. In this program individual operating activities are not financed wholly from appropriations or corporate funds; rather the allocation to the two funds corresponds with the distribution of total multipurpose reservoir operating expenses to the primary programs. Since 40 percent of the total (the portion charged to power) is financed from corporate funds, a reduction of $211,000 in the appropriation estimate, as indicated by the Bureau, could only be accomplished by a total reduction of $352,000 in the program estimate.

When the budget program was submitted in September, the TVA Board believed and it still believes that the program estimate of $3,927,000 for 1956 is the minimum estimate possible to permit TVA to fulfill its statutory obligations and responsibilities to the public in keeping with reasonable standards. For example, the estimate for maintenance of $264,000 was based on assuming a risk that no situations would develop which would require substantial maintenance activities. The frugality of this estimate is demonstrated by its relation to the investment of more than $260 million in plant to be maintained.

As shown on page 41 of the 1956 budget program, the annual costs of this program, adjusted for increases in salaries, wages, and prices of commodities and services, have declined significantly since 1947 despite the addition of three new dams to the system. The original 1956 estimate, adjusted for increased prices, for 19 dams and reservoirs is only 63 percent of the adjusted actual cost for 16

dams and reservoirs in 1947. The 1956 estimate without any price adjustment is $3,927,000 for 19 projects, compared to actual expenditures of $4,010,000 in 1947 for 16 projects.

The results of such a forced reduction could only be a serious loss of efficiency in management and inability to fulfill all of its statutory obligations and responsibilities to the public.

A review of the projected 1956 program shows that a reduction of $352,000 in the estimate would have at least the following adverse consequences:

1. Reduction of stream gaging work upon which the full effectiveness of the reservoirs for navigation, flood control, and power depends.
2. Curtailment of scheduled operating studies precluding potential improvements in operating methods which might otherwise be possible.
3. A reduction of plant protection services about 15 percent below the minimum limit considered desirable in security plans reviewed by the Department of Defense.
4. Retardation of the program of disposal of surplus lands by sale and elimination of activities relating to transfer of lands to State and local agencies for general public use and licensing and leasing of lands for recreation or other uses, forcing management direction contrary to stated national policy.
5. Elimination of all research and development work in the field of malaria control, including studies on resistance of malaria-carrying mosquitoes to DDT, development of more efficient larvicidal techniques and new insecticides, and improvement of vegetation control measures. This would seriously limit opportunities for a continuation of reductions in annual malaria control costs.
6. Elimination of all cooperative work with State, municipal, and industrial organizations in stream pollution control work, thus inhibiting the possibilities for cleaning up the waters in the Tennessee River and its tributaries.
7. Reductions in the frequency of scheduled technical inspections of safety and other conditions at dams and reservoir structures to determine maintenance requirements. This would increase risks of small defects developing into large maintenance problems because they might not be discovered soon enough.

Fertilizer and munitions development

The TVA request of $2,374,000 for fertilizer and munitions development apparently was reduced by $224,000, affecting research on fertilizer products and processes, basic agronomic research, and farm test-demonstrations.

The continued success of TVA's fertilizer and munitions development program depends on basic chemical research and process development. In order to provide more funds for basic agronomic research, TVA reduced its estimate for products and process research in 1956. A further reduction would mean the termination of some essential research now underway and the deferral of some new research projects.

The 1956 estimate for basic agronomic research provides for a different kind of research program than that of the past. Formerly, basic agronomic research related to high-analysis, single-nutrient fertilizers. Future research will involve the evaluation of chemical compounds as sources of more than one basic nutrient, a more complex kind of investigation. More attention is to be given to complicated problems of plant, soil, water, and plant-food relationships, which in turn involve such problem factors as water solubility, particle size, nutrient availability, and methods of application of plant foods. TVA feels that the research planned for 1956 will produce better, more uniform, and more timely research results than past results. It feels this so strongly that it has reduced the estimate for research on fertilizer products and processes below the 1955 level in order to provide more funds for agronomic research without increasing the program total significantly. Under the Bureau allowance it will be impossible to initiate this modified research program at an effective level, and questions of vital concern to whole fertilizer program cannot have adquate and timely answers.

The Bureau allowance would substantially provide the same funds as were actually expended during 1954 and would drastically affect the program. In the case of farm test-demonstration of fertilizer, it would be misleading to consider 1954 as a base period. Farm test-demonstration involves the testing and demonstration of new and improved fertilizer on operating farms under a partial payment plan. In 1954 a severe drought curtailed fertilizer use. Farmers took much less fertilizer than had been anticipated, resulting in a net reduction in TVA expenditures for this purpose of about $165,000 below the estimate. The 1956 estimate assumes, as it must, normal weather conditions. A different fertilizer—calcium metaphosphate—has replaced fused tricalcium phosphate, the experimental production of the latter having been concluded. This new fertilizer,

because of its high concentration, costs more to produce than fused tricalcium phosphate. This increased cost is reflected in the 1956 estimate. The expenses of the State extension services for supervision of the farm test-demonstration work are partly paid for by TVA under contracts. Generally increased costs have been experienced by the institutions, and the 1956 estimate recognizes this effect on TVA payments.

For the reasons cited above, a return to the unrealistic 1954 expenditure level would have a serious effect on farm test-demonstration activities. To operate under the Bureau allowance would require a sharp reduction in the amount of fertilizer distributed. Fewer farmers could participate, in spite of a growing interest in this educational program in the new fertilizer-using areas of the Midwest, the Great Plains, and the Rocky Mountain area. Both program supervision and program evaluation would suffer.

The fertilizer development program is of national importance to farmers and the fertilizer industry. The Board urges that it be maintained at a fully effective level.

Administrative and general expenses

The 1956 estimate for administrative and general expenses was $4,431,000; the Bureau allowance is $4,142,000, a reduction of $289,000. We understand from the Bureau staff that this reduction might be accomplished by reducing our estimates for the Government Relations and Economics Staff by $40,000, the Division of Personnel by $81,000, and the Information Office by $73,000, and by reducing other administrative expenses by an additional $95,000. This reduction will so severely restrict the level of administrative services that the quality of performance throughout the organization will be adversely affected. In the interest of overall efficiency and economy, TVA provides management services common to all projects and programs on a centralized basis. Unless these services can be supplied promptly and competently, construction schedules are disrupted and program accomplishments impaired. The reduced allowance will create serious deficiencies in professional assistance to principal management officers and in essential services to operating divisions.

The most serious results of the reduced figure will occur in staff studies and certain technical services. At the present time there is urgent need for TVA analyses of current regional conditions and trends in order to identify regional problems. Only by such staff studies can the Board of Directors be properly advised and assisted in program planning for integrated development of regional resources. TVA is now placing increased emphasis on the extension and strengthening of working relationships with State and local agencies. It is trying to stimulate more effective Federal-State-local partnerships to solve local problems. Without staff to develop working arrangements for these cooperative efforts, progress will be greatly handicapped and the benefits of work in the past few years cannot be fully realized. The Government Relations and Economics Staff conducts both the research and liaison functions; to reduce its funds by $40,000 would greatly weaken its effectiveness as a staff aid.

About $91,000 of the $248,000 estimate for the Information Office is for the operation of the technical library; $30,000 is for scheduling of foreign and other visitors; and the remainder is for handling inquiries from the press and the general public, preparation of the annual report as required by law, and assistance to other TVA divisions on reporting and information matters. The reduction of $73,000 for these functions would cripple all of them. The technical library serves not only as a reference library but also provides research services to technical staff members and to central management offices; at the reduced level the research services will have to be eliminated. The services of library experts greatly increase its efficiency and reduce costs of library research. Without such help the technical staff would be greatly handicapped and information required by them in their work would need to be secured by uneconomical methods. The advantages of a trained, central service will be sacrificed to a more time-consuming and expensive method. Over 3,000 persons a year seek arrangements to visit TVA for study purposes. About half of these are foreign visitors; for the majority of them, the Department of State, the Foreign Operations Administration, and other Federal agencies request TVA to arrange schedules. Reduced funds will force TVA to reject many of these requests or give them only cursory attention. Nine people handle the remaining functions of the Information Office. This is a minimum staff to give adequate attention to communications within an organization of this size and make a reasonable response to the requests of the press and the general public for information.

The other reductions in the allowed amount for administrative and general expenses must be applied to the management services division. In this connection, it must be recognized that costs of providing personnel, fiscal, medical, safety, and other management services do not vary in direct proportion to the size and scope of the total program. When the program activities are expanding, increases in administrative and general expenses are less than proportionate; similarly, in a period of declining program expenditures it is not possible to make proportionate reductions in administrative and general expenses. The amount allowed will deprive the Division of Personnel of sufficient staff to provide the particular personnel services required when onsite construction work is declining and to proceed efficiently with the recruiting, investigation, and training of new employees to operate the power generating units as they are completed. Effective personnel assistance is essential if construction work is to be kept on schedule; TVA's remarkable record of economy and efficiency in construction reflects the accomplishments of the Division of Personnel, both in recruitment and personnel relations. The Division of Finance will have to make curtailments which would reduce the value of fiscal services as an essential management tool. The high cost of service-connected injuries in terms of both employee compensation and loss of productive work time demands that a reasonable level of medical and safety services be provided. Considering that well over half of TVA employees are engaged in hazardous work, arbitrary limitations on these services will clearly increase total cost and impair efficiency.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D. C., December 11, 1954.

Hon. HERBERT D. VOGEL,
Chairman, Board of Directors,
Tennessee Valley Authority, Knoxville, Tenn.

MY DEAR GENERAL VOGEL: As a result of the information presented in your letter of December 6, 1954, the budget determination previously conveyed to you in my letter of December 1, 1954, has been revised as follows:

Payment to Tennessee Valley Authority fund:

Amount previously approved	$27,450,000
Revised amount	27,550,000

In accordance with your request, the amount of $100,000 is being provided for a management staff responsible to the Chairman but does not contemplate the legislation referred to on page 6 of your letter.

The Bureau of the Budget has given very careful consideration to the statements concerning the power generating needs made by the majority of the Board and by the Chairman in your letter of December 6, 1954. We note that the Board "is giving immediate and serious attention to the possibilities of financing further expansion of the TVA power system by means other than appropriations." We also realize as you stated in your earlier letter of November 10 that "the problem of finding alternative means of financing new steam plants in the Tennessee Valley area is very large and complex." We feel, however, that some positive action by the Board is desirable at as early a date as possible. We agree as stated in the bottom of page 4 of your letter of December 6 "if the Board of Directors and staff will move promptly to devise a system of new financing—and if the Congress will act promptly to approve a request along that line—it should be possible to get the additions to existing steam plants started in time for them to produce power at the end of 1958 in the amounts necessary to meet the demand." We, therefore, suggest that immediate attention be given to this problem with the objective of working out a satisfactory system of self-financing in time for consideration of legislation at the next session of the Congress. If Congress does not act in time to allow the necessary starts to be made for your 1958 needs, we will reconsider the entire matter in the light of the then prevailing situation.

Members of the Bureau of the Budget staff will communicate with your budget officer concerning details of the revised amount approved.

Your cooperation in speedy revision of details in order to expedite printing will be appreciated.

Sincerely yours,

ROWLAND HUGHES, *Director.*

63240—55——12

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., December 15, 1954.

Hon. ROWLAND HUGHES,
Director, Bureau of the Budget,
Executive Office of the President,
Washington 25, D. C.

DEAR MR. HUGHES: We are submitting herewith the TVA budget document for fiscal year 1956 which has been revised in accordance with your letters of December 6 and 11, 1954. The December 11 letter denies all of the items appealed by the TVA Board, but allows an additional $100,000 at the request of the Chairman of the TVA Board to provide for a management staff responsible to him. We note your statement that this allowance is in lieu of legislation requested by the Chairman which would make him executive head of the agency with responsibility for dispatching the work of the agency.

My colleagues have asked me to point out that the item for a management staff responsible to the Chairman was not included either in the original TVA submission or in the Bureau of the Budget's December 6 allowance letter, and they therefore wish to take this occasion to state their views thereon. In their judgment a separate management staff responsible to the Chairman would not be in the interest of TVA. They believe it would interfere with the effective functioning of the Board in the management of the corporation, and recommend that this item be deleted from the TVA budget.

In this I hold the opinion as aforestated that a management staff is necessary in a complicated organization of the size represented by TVA, in order that the efficiency of its operating procedures may be continually examined at executive level and that all functions may be thoroughly coordinated.

Sincerely yours,

HERBERT D. VOGEL,
Chairman of the Board.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington 25, D. C., December 20, 1954.

Hon. HERBERT D. VOGEL,
Chairman of the Board of Directors,
Tennessee Valley Authority, Knoxville, Tenn.

MY DEAR GENERAL VOGEL: Your letter of December 15, 1954, sets forth the views of your colleagues on the Board of Directors recommending the deletion of funds from the Tennessee Valley Authority budget for the establishment of an executive level management staff responsible to the Chairman and reiterates your view that staff assistance for the Chairman, along the lines discussed in your budget appeal letter on December 6, 1954, is both necessary and desirable.

In view of the difference of opinion within the Board, it has been decided that in place of identifying $100,000 for a management staff in the budget this amount will be shown as a one line "contingency" item in the schedule for administrative and general expenses. This is being done with the understanding that in the event agreement is not reached by members of the Board with respect to a management staff prior to the time the hearings are held by the Congress on the 1956 budget, you would be free to present your recommendations regarding the need for such a staff to the Appropriations Committees.

Sincerely yours,

ROLAND HUGHES, *Director.*

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., March 7, 1955.

Hon. ROWLAND HUGHES,
Director, Bureau of the Budget,
Washington 25, D. C.

DEAR MR. HUGHES: It is now more than a year since the Dixon-Yates contract was first proposed as a means of providing an addition to the power capacity available to meet the loads in the TVA service area by the fall of 1957. It is already too late for such a plant to produce any energy for use in 1957, and there is no certainty that power from the facilities contemplated in the contract will be available in 1958, or indeed at any dependable date.

There are many serious obstacles to completion of the Dixon-Yates arrangement. The contract itself is now in litigation. The companies have not yet

filed with the Securities and Exchange Commission their application for the necessary approval of the agreements for debt financing. After many months of effort AEC and TVA have been unable to agree on a method of handling the Dixon-Yates power. None of the arrangements so far proposed would avoid serious adverse effects on one or the other agency, or on both. Although the Dixon-Yates contract is with AEC, and TVA would participate only as a transmitting agency for AEC with the understanding that it would bear only such costs as would be commensurate with benefits received, no formula has yet been devised to accomplish this result. The difficulties of negotiation are inherent in the fact that the proposed transaction does not provide the most economical way to supply additional power.

The recent statements of Memphis officials make clear another serious obstacle. From the beginning, the participation of TVA in the negotiations has rested on the assumption that the power purchased from Dixon-Yates by AEC might be used to meet load requirements in the Memphis area. That basic assumption no longer appears to be tenable. The mayor of Memphis and the head of its municipally owned electric distribution system have made public record of their determination not to accept power generated at the plant proposed by Dixon-Yates under any circumstances. Without a market in Memphis for power from the proposed Dixon-Yates plant across the river in Arkansas, the basis for the Dixon-Yates arrangements would disappear. The location is such that if the plant could not be used to serve the Memphis load, its output could not be used on the TVA system by any reasonable engineering or economic standards.

In the light of all these circumstances, the Board of TVA requests your reconsideration of the question, and urges upon you approval of the commencement of construction by TVA of the facilities required to meet its system's load. Construction of a plant near Fulton, Tenn., is the most efficient and economical way to add the capacity required to meet the power demand in TVA's present service area, and fortunately, it now appears that construction of the Fulton plant can proceed without increasing the total amount of appropriations already requested for TVA. The $6,500,000 identified in the President's 1956 budget for construction of transmission lines that would be needed to carry power from the Dixon-Yates plant across the Mississippi can be diverted to begin the work. Additional funds can be made available from sources other than appropriations if the Congress authorizes the TVA to use other methods of financing capital investment. As you are aware, TVA expects to present for your approval and submission to the Congress in the present session a proposal for the required legislation.

We believe the public interest will be served by your approval of our request. The addition of the words "including commencement of construction of a power-plant to be located near Fulton, Tenn." at the appropriate place in the appropriation bill is all that will be required, and we should like to present, with your approval, a request for such language when we appear before the House Committee on Appropriations.

The cancellation of the Dixon-Yates contract, which this action would permit, would make it unnecessary to amend the power contracts now existing between TVA and AEC. This in turn would save for AEC the burden of much higher power costs for many years to come. It would relieve both agencies of the time and effort required to conclude and administer complicated arrangements. Construction of the Dixon-Yates plant has not yet begun, and early cancellation could be effected without the waste of materials or equipment.

In your allowance letter of December 18, 1953, you advised TVA, and the President later informed the Congress, that if arrangements could not be consummated to transfer to private suppliers from 500,000 to 600,000 kilowatts of TVA's commitment to AEC, a request for funds would be submitted to permit TVA to construct the facilities required to meet the system loads. No such arrangements for transfer of AEC load have been concluded after more than a year of effort, and we therefore urge you to request authorization from the Congress for commencement of the needed construction by TVA. As we have described above, it will not be necessary to request an increase in the proposed appropriation. Therefore the objective stated by the President in his budget message for fiscal year 1955, as we understand it, will be achieved.

General Vogel does not share the views expressed above, and we understand that he will provide you with a statement of his own position.

Very truly yours,

TENNESSEE VALLEY AUTHORITY,
HARRY A. CURTIS, *Director.*
RAYMOND R. PATY, *Director.*

TENNESSEE VALLEY AUTHORITY,
Knoxville, Tenn., March 7, 1955.

Hon. ROWLAND HUGHES,
Director, Bureau of the Budget,
Executive Office of the President, Washington, D. C.

MY DEAR MR. HUGHES: I am enclosing herewith the draft of a letter prepared by the staff of TVA at the request of Directors Curtis and Paty. This draft was placed on my desk just before I left my office to attend a regular meeting of the Board. As a last item of business the letter was submitted for Board approval by the General Manager.

The Chairman who had been afforded no time to consider the letter nevertheless pointed out that its submission at this time would be premature and presumptuous since it relates to a contract already consummated by an official agency of the Government and to which TVA is not a party.

He also pointed out that the letter itself represents opinion rather than fact. There is no reason for the Chairman to believe that the contractual agreement between TVA and AEC relative to changes in the Shawnee contract, induced by the MVGC-AEC contract, cannot be resolved except as the other two members do not wish it resolved.

The last stated position of TVA has been given to AEC and is presently receiving consideration by the Board of Directors of AEC. No indication has been received from AEC to indicate that TVA's position is unacceptable to AEC. Even if it were unacceptable, that would not mean that the matter could not be amicably resolved.

As to the position of the city of Memphis, TVA has received no official communication from the mayor of Memphis or any other responsible person which would give substance to the threat that Memphis will build its own powerplant. No action, that is known, has been taken by the City Council of Memphis that would lead to the building of such a plant.

The Chairman feels that the matter of building a new steam plant at Fulton has been dealt with by the Congress of the United States, and that no purpose can be served by reopening the question at this time.

He so informed the other members and Dr. Curtis then stated that he and Dr. Paty had already determined upon the wording of the letter and that they wanted it sent as presented. Dr. Curtis then called upon Dr. Paty for a vote and the two declared that their vote represented an opinion of the majority of the Board. Thereupon Dr. Curtis folded his papers got to his feet and prepared to leave.

The Chairman stated that he could not accept a vote without discussion and that he had not been given time either to study the letter or prepare a discussion. He directed Dr. Curtis to resume his seat. Dr. Curtis refused to comply and walked out of the room.

The Chairman told Dr. Paty that he could not accept the vote except upon his (the Chairman's) call after full and free discussion. Dr. Paty said he would be willing to discuss it in Dr. Curtis' absence but that Dr. Curtis' vote would have to count. The Chairman could not accept this without an opportunity to dissuade Dr. Curtis from his position.

I report therefore that if the letter (copy of which is enclosed) is forwarded to the Director of the Budget such action constitutes a personal act by the parties concerned and even though it may represent a majority view it has been promulgated by other than open and official routine. If the Director of the Budget wishes in spite of this to give consideration to the letter in question as representing the views of a majority of the Board the Chairman is forced to oppose the thoughts contained in it and to dissent from the recommendations.

Sincerely,

HERBERT D. VOGEL,
Chairman of the Board.

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D. C., March 12, 1955.

Hon. HERBERT D. VOGEL,
Chairman, Board of Directors,
Tennessee Valley Authority, Knoxville, Tenn.

MY DEAR GENERAL VOGEL: This will acknowledge your letter of March 7, 1955, and a joint letter of the same date from Directors Curtis and Paty, with

respect to reopening the question of further expansion in construction of steam plants by the Tennessee Valley Authority.

A further reply will be made when we have completed our study of the points made in both letters. Will you please so inform your associate directors.

Sincerely yours,

ROWLAND HUGHES, *Director.*

EXECUTIVE OFFICE OF THE PRESIDENT,
BUREAU OF THE BUDGET,
Washington, D. C., March 17, 1955.

Hon. HERBERT D. VOGEL,
Chairman, Board of Directors,
Tennessee Valley Authority, Knoxville, Tenn.

MY DEAR GENERAL VOGEL: This is with further reference to your letter of March 7, 1955, and the joint letter of the same date from Directors Curtis and Paty, which were acknowledged by our letter of March 12.

As your letter indicates, the contract between the AEC and the Mississippi Valley Generating Co., is now in effect. The specific reason for such a contract, as outlined in the President's 1955 Budget message, was to relieve TVA of a part of its AEC load, thus releasing an equivalent amount of generating capacity for other consumers in the TVA system. Since the contract will accomplish this purpose, there is no reason for exploring at this time alternative methods of providing additional generating capacity for the TVA system in the same area where replacement power furnished to TVA by AEC will be available.

With respect to the negotiations between TVA and AEC regarding the handling of MVGC power, it would seem that this is merely a matter of two Government agencies working together to devise arrangements which will be in the best interests of the United States. We have no reason to believe that such arrangements will not be concluded in the same manner as previous arrangements between TVA and AEC under existing contracts.

It is understood that the TVA's contract with the city of Memphis will expire on June 1, 1958. Since Memphis presently uses a substantial amount of TVA power, and in view of the repeated assertions that the city will build its own powerplant, it is requested that the Board take immediate steps to obtain definite information from the city as to whether it will or will not require service from the TVA system after the expiration of the present contract. Such information, together with an evaluation of its effect on future TVA load requirements, should be furnished to this Bureau as soon as possible.

Sincerely yours,

ROWLAND HUGHES, *Director.*

(NOTE: For subsequent letter from City of Memphis see p. 39.)

INCOME AND EXPENSE OF POWER OPERATIONS

Mr. RABAUT. At this point in the record, we shall insert page 42 of the justifications.

(The page referred to follows:)

SCHEDULE B–1.—*Power operations for fiscal years ending June 30, 1954, 1955, and 1956*

	1954 actual	1955 estimate	1956 estimate
Income:			
Operating revenues:			
Sales of electric energy:			
Municipalities and cooperatives	$52,732,616	$58,940,000	$68,440,000
Commercial and industrial	23,669,332	23,530,000	27,680,000
Federal agencies	54,368,480	103,150,000	123,900,000
Electric utilities	127,378	140,000	140,000
Total outside sales	130,897,806	185,760,000	220,160,000
Rents and other revenues	608,670	633,000	653,000
Total operating revenues, exclusive of interdivisional sales and rents	131,506,476	186,393,000	220,813,000
Incidental income from recovery of operating expenses:			
Interchange power delivered	127,340	239,000	761,000
Sales promotion	128,019	130,000	130,000
Other	216,262	209,000	201,000
Subtotal	471,621	578,000	1,092,000
Interest from long-term receivables	13,937	15,000	15,000
Total incidental income (note 1)	485,558	593,000	1,107,000
Total income	131,992,034	186,986,000	221,920,000
Expenses:			
Production:			
Generation	51,758,313	79,224,000	104,244,000
Purchased power	2,521,607	3,772,000	479,000
Interchange power received	10,026,338	6,200,000	
Total production expense	64,306,258	89,196,000	104,723,000
Transmission	7,049,611	7,790,000	7,732,000
Customers' accounting and collecting	121,670	133,000	143,000
Sales promotion	609,232	669,000	676,000
Payments in lieu of taxes	3,578,668	3,883,000	4,188,000
General operating expense	4,255,336	4,668,000	4,926,000
Interest on funded debt	693,376	460,000	335,000
Other expense	169,335	129,000	131,000
Total operating and interest expense	80,783,486	106,928,000	122,854,000
Less interdivisional sales and rents (note 2)	2,441,331	2,590,000	2,660,000
Total direct expenses	78,342,155	104,338,000	120,194,000
Distribution of administrative and general expenses (schedule B–5)	1,118,689	1,280,000	1,450,000
Total	79,460,844	105,618,000	121,644,000
Allocated from multipurpose reservoir operations	1,430,731	1,573,000	1,435,000
Total expenses before depreciation	80,891,575	107,191,000	123,079,000
Depreciation on power facilities	21,736,319	29,572,000	39,515,000
Depreciation allocated from multipurpose reservoir operations	1,223,183	1,228,000	1,235,000
Total expenses	103,851,077	137,991,000	163,829,000
Net income from power operations	28,140,957	48,995,000	58,091,000

NOTE.—In accordance with the uniform system of accounts prescribed by the Federal Power Commission, TVA's published financial statements reflect these items as follows:

1. Incidental income is deducted from the appropriate operating expense.
2. Interdivisional sales and rents are included in operating revenues.

These departures are made herein for clarity of presentation for budgetary purposes.

INTERCHANGE POWER

Mr. RABAUT. Please explain the change between 1955 and 1956 in the two items on purchase of interchange power.

Mr. WESSENAUER. From the table you will note that the amount of purchased and interchanged power received in 1956 will be less than in 1955.

The explanation for that, sir, is that we expect to have in service in fiscal year 1956 more of the new capacity which is now under con-

struction. Based on the estimated loads for 1956, it will not be necessary to utilize the power from other systems which we have had to buy this year.

Mr. PHILLIPS. What are you reading from which shows a reduction?

Mr. WESSENAUER. Sir, I am looking at the table on page 42 of the justifications.

You will notice under "Expenses," the second and third items.

Mr. PHILLIPS. My difficulty is to see how they will sell $761,000 worth of interchanged power in 1956, and not buy any. Why do I read the chart that way, Mr. Wessenauer? Under "Interchanged power delivered," you show in your balance sheet an estimated $761,000 for it, and you show as an expense against it no interchanged power paid for.

Mr. WESSENAUER. Well, that simply reflects the fact that we expect in 1956 not to be receiving interchange power, but to be delivering interchange power.

So, if we receive no power, we would pay nothing, and we would expect the other companies to pay us for the power we deliver to them, sir.

Mr. PHILLIPS. How can you deliver power without getting it, and paying for the interchange power?

Mr. WESSENAUER. From our own generation.

Mr. PHILLIPS. This is not entirely outside power?

Mr. WESSENAUER. No, sir.

Mr. PHILLIPS. I get the point. When you said "Interchange power," Mr. Chairman, I thought you were talking about outside power.

Mr. RABAUT. It is standard practice.

TRANSMISSION EXPENSE

Mr. RABAUT. Your transmission expense item is reduced from $7,790,000 to $7,732,000. How are you able to do this when you are adding additional miles of lines to your system?

Mr. WESSENAUER. The explanation of that, sir, is that in transmission expense, we include tolls paid for power interchanged. Inasmuch as we are not receiving interchange power in fiscal year 1956, there is a reduction from tolls alone of about $242,000 from the previous year.

Another item which is not included in fiscal year 1956 was some expense which we incurred in 1955 in connection with operating training, which we will not be continuing into next year to the same extent.

SALES PROMOTION

Mr. RABAUT. Please explain the sales promotion program for which $676,000 is shown in the budget.

Mr. WESSENAUER. That item reflects the work we do with our distributors in assisting the consumers in the region to make the best use of power. It should be recognized, in connection with the $676,000, Mr. Chairman, there is an income item of $130,000, which represents payments to us to assist in that work by the municipalities and cooperatives.

In addition to this money, of course, the individual local agencies spend a lot of their own money.

Mr. RABAUT. Why do you have to go into sales promotion when there is such a demand for your power?

Mr. WESSENAUER. Well, I think sales promotion as used here or the terminology which is used here, is to conform to the Federal Power Commission designation of this class of expenditure.

Actually, our sales promotion is more in terms of assisting and responding to the demands on us, and on the distributors for information with respect to the use of power.

There are inquiries coming in from residential, commercial, and industrial customers, for example, as to what changes they might need to make in order to make more effective use of the power that they buy.

Mr. RABAUT. That item costs over a half a million dollars.

Mr. WESSENAUER. Yes, sir. I think it might be interesting to compare the TVA expenditures with similar expenditures of other power systems. The TVA expenditures represents about 37 cents per consumer. The local distributors spent another $1.15, or the total of the 2 together is about $1.52.

The utility industry generally, that is, the private companies, spent on the order of $2.61 per consumer.

Mr. RABAUT. Is that so?

Mr. WESSENAUER. That is right, sir.

Mr. RABAUT. Well, that comes as a surprise to me.

ADDITIONS AND IMPROVEMENTS AT COMPLETED PROJECTS

Mr. RABAUT. We now come to the item "Additions and improvements at completed projects."

We will insert the table shown on page 17 of the justifications and the narrative text into the record at this point.

(The page referred to follows:)

ADDITIONS AND IMPROVEMENTS AT COMPLETED PROJECTS

This table shows obligations for additions and improvements at completed projects.

	1954 actual	1955 estimate	1956 estimate
Appropriated funds (multipurpose projects):			
1. Construction cleanup work on completed projects	$129,968	$114,000	$134,000
2. Site improvements and public-use facilities	239,996	227,000	269,000
3. Construction for malaria control	504,947	340,000	
4. Access roads to cabin sites scheduled for sale	46,816	50,000	50,000
5. Rehabilitation of operating mechanisms for spillway gates at Wilson Dam	324,209	262,000	
6. Miscellaneous plant and equipment	109,726	79,000	15,000
Total appropriated funds	1,355,662	1,072,000	468,000
Corporate funds (single-purpose projects):			
7. Minor additions and improvements to generating stations	135,489	26,000	146,000

(A statement on additions and improvements follows:)

1. Construction cleanup work on completed projects, $134,000

The 1956 estimate of $134,000 for construction cleanup work covers final land surveys, land records, allowances for court awards for land-acquisition cases in process of condemnation, and preparation of record drawings and reports-recording data on projects as built. About one-third ($42,000) of the 1956 estimate relates to work on final record drawings showing features of projects as built and final

technical reports for engineering reference and maintenance purposes. An amount of $64,000 is required for permanent land marking and land-record plats. Allowances for court awards in condemnation cases and technical and legal services required in connection with uncompleted land-acquisition cases are estimated at $28,000. The 1955 estimate includes nonrecurring credit items of $27,000 related to the completion of major projects. The 1956 estimate is $7,000 less than the 1955 estimate adjusted to eliminate the nonrecurring credit items.

2. Site improvements and public-use facilities, $269,000

TVA projects are open to the public and are points of interest for a great number of visitors. For example, during fiscal year 1954 there were over 7 million visitors to TVA dams. There were more than 1 million visitors at Kentucky Dam; 496,000 at Pickwick; 107,000 at Wheeler; 146,000 at Guntersville; 790,000 at Fontana; and 213,000 at South Holston. Such large assemblies of people require parking space, proper sanitation facilities, and other service installations. TVA provides only minimum facilities necessary to meet reasonable standards of public safety and convenience. During World War II, public-service facilities planned for dam reservations were deferred to conserve materials and manpower. This caused no problem at the time because access to TVA facilities was restricted. It did, however, leave a backlog of uncompleted items which became necessary when those facilities could again be made available to the public. Proper facilities for control of public use of dam reservations are necessary to keep grounds-maintenance costs within reasonable bounds.

Completion of this work has been planned so that all essential major items of this nature now foreseen will be finished by 1960. This will require from $200,000 to $275,000 a year until that time. Needed improvements at Guntersville Dam were initiated in 1953 on which work is scheduled to continue through 1955 and 1956. An addition to the property maintenance building at Fort Loudoun Dam and additional public-use facilities at several dams are necessary to achieve minimum maintenance costs.

The 1956 estimate of $269,000 includes $27,000 for continuation of improvements at Guntersville; $15,000 for additions to the property maintenance building at Fort Loudoun Dam; public-use facilities, $68,000 at Pickwick Dam; $58,000 at Fontana Dam; $22,000 at Wheeler Dam; and $21,000 at South Holston Dam; and $58,000 for miscellaneous minor site improvements at eight dams.

3. Construction for malaria control

No funds are requested for this activity for 1956.

4. Access roads to cabin sites scheduled for sale, $50,000

The 1956 estimate includes $50,000 for constructing about 10 miles of low-cost access roads to cabin-site areas on five reservoirs. Construction of these roads will permit sale of surplus properties in isolated areas at prices sufficiently enhanced to exceed the cost of building the roads.

5. Rehabilitation of operating mechanisms for spillway gates at Wilson Dam

No funds are requested for this activity for 1956.

6. Miscellaneous plant and equipment, $15,000

The 1956 estimate of $15,000 covers a number of miscellaneous minor additions and retirements at completed projects, such as boats, motors, and other portable malaria-control equipment; and mowers, rakes, and small tools for maintenance of dam reservations.

7. Minor additions and improvements to generating facilities, $146,000

The 1956 estimate of $146,000 from corporate funds (power proceeds) covers cleanup of design work, construction services, and final technical reports on recently installed hydro generating units and steam plants; work on land records for single-purpose power projects; purchase of reservation maintenance tools for single-purpose power projects; and minor additions and retirements at various powerhouses. The 1955 estimate includes nonrecurring credit items of $99,000 related to completion of major power-generating projects. After adjusting the 1955 estimate to exclude these items, the 1956 estimate exceeds that for 1955 by $21,000. The increase represents mainly additional work on record drawings for new power-generating plants.

Mr. RABAUT. A total of $468,000 is requested. This is a reduction of $602,000 below this year's program.

Do you have any comment on that?

CONSTRUCTION FOR MALARIA CONTROL

Mr. WESSENAUER. You will notice that the major reduction, sir, is in the construction for malaria control. In the past 2 years we have been building out—what we call "building out"—malaria in some of our reservoirs.

By that, I mean we fill in the particularly shallow portions of the reservoirs and cut other parts deeper. That reduces our annual cost and expenditures on malaria control operations.

Mr. RABAUT. You have no request for malaria control funds for fiscal year 1956?

Mr. WESSENAUER. No funds are requested for construction. The second major reduction, you will notice, is No. 5 in the table. In the current year there was an expenditure of $262,000 for work on the spillway gates at Wilson Dam. That work will be completed this fiscal year, and that item, of course, is not a continuing one.

Mr. RABAUT. Are we to take this statement now that you have completed the control of malaria?

Mr. WESSENAUER. The control of malaria is a continuing problem with us from an operating standpoint.

In other words, not only do we operate the reservoirs to minimize the propagation of the malaria carrying mosquitoes, but we must each year spend money for spraying and dusting and so forth.

Mr. RABAUT. This is for construction. Are you through with construction items for malaria as apart from the spraying activity?

Mr. WAGNER. Mr. Chairman, I think we have no more malaria control construction of this kind planned at the present time. We would not want to say that we might never want to undertake any more. We might find areas in the future where it would be more economical to do construction of this kind than to use dusting. So, we might want to propose some in the future.

ACTIVITIES IN BUDGET PROGRAM

Mr. RABAUT. Now, as to the budget program, we would like to have a statement at this time.

Mr. WAGNER. Mr. Chairman, aside from the power program which has been discussed up to this point, our budget includes activities in the field of navigation and flood control, and the operation of the dams and reservoirs for those purposes; research and development work at the chemical plant, test demonstrations, and resource development work.

All of these activities contribute to the basic TVA purpose of promoting the development of the resources of the Tennessee Valley and, consequently, the Nation.

NAVIGATION OPERATIONS

The first of these activities which I would like to take up is our navigation work.

Navigation is one of the primary responsibilities of the TVA. We do not consider, however, that the construction of the navigation channel is the sole purpose that we are seeking.

The navigation channel, along with the flood control, power, our fertilizer and agricultural programs, and forestry activities and others,

are all fitted together, and are available as tools provided by the TVA for the people and the agencies of the region to use in trying to improve their economic situation.

TRAFFIC ON TENNESSEE RIVER

Tennessee River navigation is making a substantial contribution, we think, to the valley, and to the Nation.

The traffic on the river since 1933 has increased about 39 times in ton-miles, and since 1945 has increased about 5 times while river traffic in the Nation as a whole was doubling. This traffic consists of grain, which comes from the Middle West, iron and steel from the Ohio River, chemicals from the gulf coast, and some from the Ohio; automobiles, coal, gasoline, and the usual commodities which you find loaded on barges.

The amount which shippers on the river have saved might be of interest to you:

In 1954, according to our estimates, shippers who used the Tennessee River saved about $14 million as compared with the cost of transportation which would have been otherwise available to them by the lowest cost alternative.

The Federal cost chargeable to navigation, including the costs of TVA and the Corps of Engineers which operate the locks and maintain the dredged channels, and the Coast Guard, which maintains the navigation markers on the main channels, totaled something under $4 million, leaving a difference as compared with shipper savings of about $10 million, or a little better, which is about 7 percent of the total Federal investment in navigation on the Tennessee River.

In 1940 we had made a forecast as to what we thought the traffic would be by 1960, and we estimated that it would be 7 million tons. Last year, it had already reached 8.4 million tons.

We estimated that the shipper savings in 1960 would be about $9 million as compared with the figure of $14 million which was reached last year.

Mr. RABAUT. How much?

Mr. WAGNER. $14 million last year.

Mr. RABAUT. What did you estimate?

Mr. WAGNER. The estimate was $9 million for 1960.

All of this traffic now moves by privately owned barge lines, and it moves through some 75 or 80 terminals, and other waterfront establishments, privately owned and operated, along with 6 terminals at TVA steam and chemical plants.

TVA's part in this navigation picture has been to build the channel and see that it is available and in first-class condition; that improvements are made in locks and the channel as they are needed to meet the requirements of the expanding traffic and, in addition to that, to furnish the information needed by people who want to ship on the river, or who want to build river terminals and waterfront industrial plants.

WILSON DAM LOCK

The initial construction of the channel has been completed. A 9-foot depth is available all the way from Paducah to Knoxville, but the growing traffic which I have talked about is beginning to make some improvement necessary, and there is in the 1956 budget an item

of $300,000 for continuing the planning and design of a new lock at Wilson Dam.

The Wilson lock is one of the oldest in the system, and it is the worst traffic bottleneck on the Tennessee River. The maximum practical capacity of this lock is about 2.4 million tons.

Traffic through the lock had already reached 2 million tons last year, which was a 30-percent increase over the year before, and by 1958 or 1959 we believe that this maximum practical capacity of 2.4 million tons will be reached. It will be essential that we start construction of this new lock in fiscal year 1957, if we are to avoid having a real tieup at that point.

There are some other funds for minor navigation improvements in the budget to cover work at Wheeler lock and for some planning work.

The TVA system of reservoirs is a large and complex system, and its operation has a profound effect on the operation of tows, and on the operations of waterfront terminals and industries. Their owners need to know how the depths of water are affected by the operation of the reservoirs, and the fluctuations in releases from the dams; we receive a considerable number of requests for information of that kind and, of course, we provide it.

Within the basin within the past 2 years, about 24 waterfront terminals and industries were built, utilizing that kind of information. These installations represent a private investment of about $85 million. We also get requests for information about the economic feasibility of shipping on the river. I might give you an example of that:

East Tennessee produces a high-grade domestic coal, and it finds a market in the upper Mississippi Valley—along the upper Mississippi River. Barge lines have expressed an interest in the possibility of shipping that coal from Tennessee to the upper Mississippi, and within the last year or so one barge line has started a movement.

It has been small so far, but it provides a savings in their transportation costs of 1 or 2 dollars a ton. They believe that this movement should ultimately go to several hundred thousand tons a year. The coal, interestingly enough, is hauled back to the upper Mississippi Valley region in barges which bring grain down.

We believe that this is a way in which the river is being used to the benefit of both the grain farmers and the coal producers as well as the ultimate consumers of these products.

Mr. RABAUT. That is similar to the traffic on the Great Lakes.

Mr. WAGNER. Yes; it is; that is right. There are other examples of that kind, but I will not describe them unless you wish.

RECREATION DEVELOPMENT

I might say that one of the bonuses of the development of the Tennessee River is the recreation development. There has been invested some $48 million in resorts and boat docks, and boats, and so on, along the river. There are about 30,000 boats down there, and about $10 million invested in inboard boats.

Mr. PHILLIPS. You mean invested by private investors?

Mr. WAGNER. Yes, sir.

Those boats and this recreation industry are served by some 180 boat docks along the main river reservoirs and another 100 on the tributaries. These are privately owned and operated except a few which are owned by States and counties.

Many of these docks are on coves, or embayments of the reservoirs, areas where the construction of the dam has pushed the water back up a tributary stream for several miles, and in many of those embayments the water is shallow. An embayment may be as much as a half mile or a mile wide, but the channel which has adequate depth in it at all times may be only 50 or 75 feet wide.

Mr. PHILLIPS. What is an embayment?

Mr. WAGNER. My nomenclature may not be correct. I would call an embayment a small body of water extending off a larger body of water.

Mr. PHILLIPS. A little bay?

Mr. WAGNER. It may be little or large, I imagine.

Parts of these channels follow the submerged bed of the natural streams which are crooked and narrow, and if they are to be followed they have to be marked. TVA as part of its navigation program has marked some 225 miles of channel with 1,100 buoys, and we have in the past maintained those markers.

Without them it would be impossible for inboard motorboats or larger craft to operate safely on those channels. I might add that in addition to use by recreational boats, last year they carried some half million tons of traffic, mostly forest products and coal which were loaded in barges at landings along the reservoir banks and moved out to the main river.

The 1956 budget contains $100,000 for the direct expense of navigation. This is $172,000 less than our budget for the current year, and some of the activities which I have described will be discontinued and others will be curtailed.

Mr. VOGEL. I would like to make a minority statement in connection with that last reference to navigation, Mr. Chairman.

Everything that Mr. Wagner has told you, of course, is factual. I would like to point out and to emphasize the fact that as both he and I have indicated, all of the operation and maintenance of the navigation system on the Tennessee River is by the Corps of Engineers, and they budget for that.

I would also like to point out, again as we have indicated, that all of the marking of the main channel is by the Coast Guard, and they budget for that.

It boils down to the fact that the funds which are requested in the amount of $100,000 are for doing things which in large part in my humble opinion should be the responsibility of local chambers of commerce in developing and promoting their own cities for new industries and bringing navigation to them.

Mr. RABAUT. General, where would the Engineers get the funds for it?

Mr. VOGEL. They budget them in their regular submission, sir.

Mr. RABAUT. Do they get it from another department of the Government?

Mr. VOGEL. From the Appropriations Committee, sir.

Mr. RABAUT. Get it directly from us?

Mr. VOGEL. Yes, sir.

Mr. RABAUT. All right.

Mr. VOGEL. That is by agreement with the Corps of Engineers.

Mr. RABAUT. All right.

USE OF FISCAL 1955 NAVIGATION FUNDS

Mr. VOGEL. On that particular item which last year totaled $272,000, and in which there were represented 26 and a half man-years of work, I have a breakdown approximately as follows:

One and a half man-years approximately were expended on appraising the need for and in turn planning and justifying additional facilities, such as locks, lock walls, channel widening extensions, to meet the growing navigation use of the river. Part of that surely is justified.

Two and a half man-years were expended on reviewing and determining the effects of proposed structures such as bridges, pipelines, transmission lines, docks, dredges, et cetera, as required by section 26–A of the TVA Act, which in part surely is justified, but I also feel that by a closer coordination with the Corps of Engineers that that effort can be reduced because it amounts at the present time to a certain duplication. Someone desiring to build a structure must now submit request for permit to both the Corps of Engineers at Nashville and to the Tennessee Valley Authority.

If you bear in mind these man-years represent about $10,000 each, because the total is 26 and a half man-years as against total appropriation of $272,000, it would give you approximately what is expended in these ways.

No. 3——

Mr. JENSEN. What is the total?

Mr. VOGEL. $272,000, with 26 and a half man-years. It is $272,000, which is last year's budget as you will see in your justifications.

Mr. PHILLIPS. He has accounted for 4 man-years at approximately $10,000 each.

Mr. VOGEL. That is correct. There are approximately 2.9 man-years expended in obtaining technical data to provide for barge lines, industries, and others concerning the channel conditions, reservoir operating schedules, transportation services, and various locational problems associated with industrial waterfronts.

A great deal of that information can be obtained from the Corps of Engineers actually operating and maintaining the waterway.

Then there is the item of——

Mr. RABAUT. What is that you are reading from there, General?

Mr. VOGEL. This is a list which I have had prepared by our navigation division.

Mr. RABAUT. Would you like to put it in the record?

Mr. VOGEL. I will be glad to insert it in the record.

Mr. RABAUT. Without objection we will place it in the record.

(The document referred to is as follows:)

Outline of work of the Division of Navigation and Local Flood Relations

	Approximate man-years
Navigation operations:	
1. Appraise the need for and in turn plan and justify additional facilities (such as locks, lockwalls, channel widening and extension) to meet growing navigation use of the river	1.5
2. Review and determine the effects proposed structures (such as bridges, pipelines, transmission lines, docks, dredging, etc.) both privately and publicly sponsored would have on navigation, as required by section 26a of the TVA Act	2.5
3. Provide technical data to barge lines, industries and others concerning channel conditions, reservoir operating schedules, transportation services, and various locational problems associated with industrial waterfront sites	2.9
4. Maintain 1,100 markers on more than 225 miles of secondary or feeder channels	3.6
5. Participate in internal reviews and decisions relating to reservoir operations, investment and common expense allocations; management of TVA's reservoir lands and similar matters	1.8
6. Investigate opportunities for reducing transportation costs on specific commodities by using the Tennessee River	3.9
7. Identify economic, rate, and policy barriers to optimum transportation use of the river and seek integration of the river with other transportation modes	3.5
8. Investigate policies, rates and facilities of all modes of transportation as they affect the development of the Valley's resources	1.4
9. Evaluate navigation benefits	1.2
10. Division office operations	4.2
Total	26.5
In addition, work is subordered to other divisions covering the following items: Navigation gage repair, buoy reference markers, reservoir navigation charts, channel depth surveys, compilation of waterfront maps.	
Further, navigation operations also include items for power for lock operations and operation by another division of the Harriman coal terminal.	
Other work of the division not charged to navigation operations:	
Transportation information for power and fertilizer programs	3.1
Local flood relations	4.5

Mr. VOGEL. 3.6 man-years, $36,000 approximately, is expended in maintaining 1,100 markers on more than 225 miles of secondary or feeder channels.

That, gentlemen, as Mr. Wagner indicated, are secondary channels to recreational areas about 90 percent of it. There is some industrial service given there, as Mr. Wagner also indicated, but it is primarily to serve the Bowaters Paper Co., a British concern, which I do not feel the United States Government has any responsibility to for expending funds.

I might point out in general with these things that I am not opposed to doing those things in the national interest which are done in other parts of the country, but I believe that it should be a matter of national policy if we are going to mark secondary channels.

Mr. RABAUT. This firm to which you refer is located where?

Mr. VOGEL. On a tributary of the Tennessee River, sir.

Mr. RABAUT. Hiring American people?

Mr. VOGEL. Yes, sir. It is a British corporation, however.

My point is merely this, sir: If this is to be done in the Tennessee Valley, it seems to me it should be done equally on the Great Lakes, Michigan, Ohio, where I know it to be a general policy not to mark these secondary channels or to furnish this kind of data or to gain this kind of information.

Rather than consider this as an argument against it I will call this to your attention as something which ought to be done everywhere in uniformity, and I believe it is worthy of your consideration, either we do not do these things or that it be done on all other reservoirs and on harbors of the Great Lakes, sir.

Mr. RABAUT. Is there any money in the budget for any of this?

Mr. VOGEL. $100,000, sir, as against $272,000.

Mr. PHILLIPS. $100,000 in this budget before us now?

Mr. VOGEL. Yes, sir. I feel that should be sufficient to accomplish those things which ought to be done.

Mr. RABAUT. Off the record.

(Discussion held off the record.)

Mr. RABAUT. Early in your statement you mentioned speaking in behalf of the minority.

Mr. VOGEL. I want it clearly understood I am not speaking for the Board.

Mr. RABAUT. In other words, you are divided on this issue?

Mr. VOGEL. Yes. I want to be sure they are represented as representing the request for increase back to $272,000.

Mr. RABAUT. Is anybody here asking for $272,000 now?

Mr. VOGEL. Not in this budget; no, sir. I am comparing it with the original——

Mr. RABAUT. What is the case being made here with $100,000 and $272,000? I don't understand it.

Mr. VOGEL. The case has been made by the General Manager in behalf of the majority of the Board of Directors of the TVA that the budget last year for this purpose stood at $272,000 and that it now is reduced to $100,000, and he does not feel that it is adequate to do what was done the year before.

Mr. RABAUT. Is anybody asking that it be increased?

Mr. VOGEL. I take it that he is asking that; yes, sir.

Mr. RABAUT. Are you asking it be increased, Mr. Wagner, above the budget?

Mr. WAGNER. I thought I described what had been done and said that the budget for next year is $100,000, and that was $172,000 less than in the current year, and as a result of that some of our——

Mr. RABAUT. I understood you said there was a reduction of $172,000.

Mr. WAGNER. That is right as compared with the current year; and I did say some of our activities will be discontinued, some of those which I had described, and some would be curtailed.

NAVIGATION FACILITIES

Mr. RABAUT. All right.

Now we get to navigation facilities, $406,000 is requested.

Insert the table on page 20 of the justifications into the record.

(The page referred to is as follows:)

NAVIGATION FACILITIES

Plans for proposed navigation facilities have been developed in cooperation with representatives of the Corps of Engineers, Department of the Army. The 1956 estimate is $406 000.

This table shows estimated obligations for 1956 for navigation facilities

1. Planning and design work preparatory to construction of a new navigation lock, Wilson Dam	$300,000
2. Other navigation facilities:	
Beginning construction of an upstream guide wall at Wheeler lock	90,000
Preliminary planning for future improvements at existing locks and completion of record drawings for additions to the lower guide wall at Wheeler lock	16,000
Total	406,000

A statement on navigation facilities follows:

1. Planning and design for new navigation lock, Wilson Dam, $300,000

The TVA system of dams on the main stem of the Tennessee River has created a navigation channel from Paducah, Ky., near the mouth of the Tennessee to Knoxville, Tenn., some 650 miles upstream; $157,986,000 has been invested to make the river navigable. At the center of this navigation system is a serious bottleneck, the old lock system at Muscle Shoals. An additional investment estimated at $35 million to improve lockage facilities at this point will greatly increase the benefits of the investment in the whole system.

Three lockages—through a tandem double-lift lock at Wilson Dam and a single-lift lock at lock and dam No. 1, about 2.6 miles downstream from Wilson Dam—are necessary to pass traffic between Pickwick and Wilson Reservoirs. These old locks were designed about 35 years ago to meet the needs of navigation as visualized at that time. The controlling lock size is 60 feet by 292 feet. Barges 300 feet long are in use on other rivers but can reach no more than one important Tennessee River port because of the restriction at Muscle Shoals. The filling and emptying mechanisms and channel approaches are also obsolete. Due to the age of the operating mechanisms, failures could occur which would put the locks out of service and result in serious interruptions to traffic.

Having the tandem-lock arrangements at Wilson Dam alone doubles the operating time that would be required with a single-lift lock. In addition, each of the 2 small lock chambers requires tows to be broken into many units, each unit requiring 2 separate lockages; thus the total lockage time is 6 to 8 times that of a standard 110-foot by 600-foot single-lift lock.

Delays are also experienced for other reasons: Both the lower approach to lock No. 1 and the upper approach to Wilson locks are extremely difficult to navigate, requiring tows to proceed very slowly. Lock No. 1 is closed by high water approximately 1 week per year on the average, stopping all traffic. The Wilson locks must be closed for repairs more frequently than any other lock on the Tennessee River.

The practical traffic capacity of the Wilson locks is 2,400,000 tons per year, which is by far the lowest capacity of any lock on a major inland waterway in this country. The oldest and slowest lock on the Mississippi River—Keokuk—which is being supplemented by construction of a large modern lock, has an hourly capacity 3.2 times as great as Wilson. The slowest lock on the Ohio River—No. 41—can accommodate 6 to 9 times as many barges per lockage as the controlling chamber at Wilson.

Traffic through the Muscle Shoals locks includes the most vital commerce on the river. These locks handle all of the valley's waterborne imports of grain, automobiles, asphalt, and molasses; all river traffic associated with the operation of AEC facilities at Oak Ridge, Volunteer Ordnance Works at Chattanooga, and the Huntsville, Ala., arsenal; and the bulk of all Tennessee River traffic in petroleum products, iron and steel, scrap metals, fertilizer, phosphate rock, sulfur, and coke. Through Wilson locks, as for the river as a whole, coal shows the greatest rate of increase among all commodities shipped.

Tennessee River traffic is growing rapidly—in 1953, tonnage totaled 7,119,000 tons, or 133 percent more than in 1950; the 1954 tonnage will exceed 7,500,000. Traffic through the Wilson locks rose from 452,000 in 1945 to 1,580,000 tons in 1953; it is estimated at 1,800,000 tons in 1954. On the basis of experience to date and additional movements for which shippers have bought or are seeking to buy terminal sites, the traffic at Wilson locks will reach the practical locking capacity by 1958. Since a uniform distribution of traffic cannot be expected throughout the year, severe delays will occur before the annual traffic rate reaches 2,400,000 tons.

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Unless a new large lock is provided as soon as possible, the situation at Muscle Shoals will place a rigid ceiling on further development of traffic on the Tennessee River and will preclude realization of full value of the public investment in the Tennessee Waterway. With a new lock at Wilson Dam, it is estimated that river traffic past Wilson Dam will exceed 3,100,000 tons in 1963.

The 1956 estimate includes $300,000 for continuing planning and design work preparatory to beginning construction of a new lock at Wilson Dam. The new lock will have a single-lift with 110-foot by 600-foot chamber and a dredged canal from the lower lock entrance to the head of Pickwick Reservoir, bypassing lock and dam No. 1. Construction of the new lock will require raising an existing highway bridge across Wilson Dam to clear the lock and a new lock chamber downstream from the existing lock to replace the present lift at lock and dam No. 1. The existing locks at Wilson Dam will be kept in operating condition as an auxiliary for emergency standby service. The total cost of the project is estimated at $35 million.

2. Other navigation facilities—$106,000

In order to provide additional mooring facilities needed at Wheeler lock, the 1956 budget includes $90,000 for beginning construction of an addition to the upper guide wall. This addition will consist of three gravel-filled, concrete-capped steel sheet-pile cells approximately 30 feet in diameter, about 60 feet high, and spaced 100 feet apart center to center. It is planned to start construction work in the spring of 1956 and complete it by the fall of that year. The total cost of the upper guide-wall addition is estimated at $159,000.

Replacement of the upper guide wall at Wilson Dam is planned in 1957. The 1956 estimate includes $10,000 for design work on this replacement; $4,000 for preliminary planning for additional future navigation improvements at Wheeler and Chickamauga locks; and $2,000 for preparation of record drawings for the lower guide-wall extension at Wheeler Dam for which construction is scheduled to be completed in 1955.

WILSON DAM LOCK

Mr. RABAUT. Last year you testified that you would be ready to start construction of a new Wilson lock on July 1, 1954.

You are requesting planning money for it again in 1956 amounting to $300,000. How much will that bring the total to for design only of this lock?

Mr. WAGNER. The expenditures on planning and design for this lock were $70,000 in fiscal year 1954. Our estimate for the current fiscal year is $75,000. The request for fiscal 1956 is $300,000, which would make $445,000 out of the total cost estimated for the design of approximately $1 million.

Mr. RABAUT. For design?

Mr. WAGNER. Yes, sir.

Mr. RABAUT. How much will the lock cost? What will be the estimated cost of the lock?

Mr. WAGNER. I believe present estimated cost of that lock is $35 million, sir. The estimated design cost of $1 million is included in the $35 million.

Mr. RABAUT. Did you request construction money for it this year?

Mr. WAGNER. Yes, sir. The Board of Directors in its initial request to the Bureau asked for construction money.

Mr. RABAUT. Did you get any?

Mr. WAGNER. No, sir.

Mr. RABAUT. If your design work was far enough along last July 1 to start construction, why do you have to request another $300,000 on top of the funds you had for it this year for more and more design?

Mr. WAGNER. I think all of the funds——

Mr. RABAUT. In other words, last year did you ask for construction money?

Mr. WAGNER. Yes, sir; we did.

Mr. RABAUT. Now you need $300,000 to complete this design, and with this $300,000 you will be up to $445,000, and you estimate planning will go up to $1 million, and you wanted construction money last year. How do you figure out a thing like that?

Mr. WAGNER. It is not the planning money that will go to $1 million, sir. It is planning and design, including foundation explorations and drilling at the lock site.

The funds which were estimated to be used in the current fiscal year have not been expended to the extent of the estimate, and we believe if we are going to be in shape to start construction in fiscal year 1957, it will take about $300,000 of design work this year.

Mr. RABAUT. I have been in on a lot of projects, but I think this is a little odd.

Mr. WESSENAUER. A lot of the detailed design is done concurrent with construction, Mr. Rabaut. This contemplates having more of the detailed design done by the time next year comes so we can get into construction faster.

Mr. RABAUT. But you asked for construction money when you had as little as $145,000 on design. You are asking for construction money already.

This year you are asking for $300,000, and you estimate that leaves a balance of $550,000.

I know some of that can be used as you go along.

Mr. WAGNER. That is right.

Mr. RABAUT. That seems like a small amount of money on a project this large when you want to start on construction. It seems you are in a hurry to get going with it, whether from necessity of the operation or from fear that something might happen that you will not get it. I don't know what the reason is.

Mr. WAGNER. Mr. Chairman, it is true we will start construction of this lock later than we originally planned.

As I pointed out earlier, the maximum capacity of the lock is being pressed and will have been reached by the time we are able to get it in service or possibly before.

Mr. RABAUT. If the need for this lock is urgent, why has the Budget Bureau turned down two requests for construction funds? You might go over to the map there and show this committee where the lock will be located.

Mr. PHILLIPS. Is this a new lock or replacement?

Mr. VOGEL. Replacement, sir.

Mr. WAGNER. The lock would be located at Wilson Dam, which is at Muscle Shoals.

The locks in operation there are locks which were put in service about 1925. There are 2 locks at Wilson Dam itself in tandem, double-lift locks, and about 2½ miles downstream there is a low-lift lock, with a maximum lift of about 10 feet, and there is a canal connecting the 2 sets of locks.

The proposal is to build a new large lock beside the existing double-lift lock. It would be a single lift, 110 feet wide and 600 feet long, which would be an alternate for both present sets of locks.

The channel downstream from that lock, to lock and dam No. 1, the low-lift lock, would be dredged deeper and lock and dam No. 1 would be eliminated.

This would provide 2 locks in parallel, 1 beside the other. If one lock is out of commission—for example, if the lock gates had been rammed and damaged—the other could be used.

With high dams having a single lock as is now the case on the Tennessee River, if the lock is out of operation the river is completely closed to navigation.

It is different than at some Ohio River dams, for instance, where at some river stages traffic can pass over the dams, and lock repairs can be made without interfering with navigation.

Mr. PHILLIPS. How much larger will these be than the existing locks?

Mr. WAGNER. The existing lock chambers are 60 feet by about 290 feet.

This lock will be 110 by 600, which is the same as the locks downstream at Pickwick and Kentucky Dams. It is smaller than some of the new locks being built on the Ohio.

Mr. RABAUT. These locks will be in conformity with other locks you have put in more recently?

Mr. WAGNER. Yes; with those we have downstream.

Mr. RABAUT. You have not answered my question as to why has the Budget Bureau turned down two requests for construction funds.

Mr. WAGNER. I don't know that I can answer that.

Mr. RABAUT. Have you any idea?

Anybody else have any ideas as to why they did it?

Mr. VOGEL. I cannot answer it categorically, sir, but I have an idea that they weighed the necessity for this against the other needs in the Nation, which would include, certainly, the replacement of locks on the Ohio River.

All we were able to do, of course, was to make a representation of necessity with respect to this one stream, and it would appear rather obvious that someone must relate these among themselves.

That is the best I can tell you. I don't know that but I should judge it to be the case.

Mr. RABAUT. This committee travels along pretty close with the Bureau. Nevertheless, the committee regards the Budget as just another agency of the Government. We would like to know the reasons why the Budget Bureau acts at times.

NAVIGATION OPERATIONS

Insert page 34 of the justifications showing the navigation operations program.

(The page referred to is as follows:)

NAVIGATION OPERATIONS

Appropriated fund requirements for direct navigation expense in 1956 are $100,000. The estimate for 1955 is $272,000, and actual expense for 1954 is $277,450. Net expense figures for 1956, 1955, and 1954 are $2,548,000, $2,827,000, and $2,725,990, respectively. Net expense is the direct expense of the program plus depreciation on navigation facilities (which involves no cash outlay), administrative and general expenses, and a portion of multipurpose reservoir operations expense.

Detail of the figures described in the above paragraph are as follows

	1954 actual	1955 estimate	1956 estimate
Income	$18,151	$25,000	$31,000
Expenses:			
Direct expenses:			
1. Study and development of river transportation	249,838	245,000	69,000
2. Operation of public-use river terminals	19,360	19,000	23,000
3. Power for lock operations	7,594	8,000	8,000
4. Maintenance of navigation facilities	658		
Total direct expenses	277,450	272,000	100,000
Distribution of administrative and general expenses	16,251	17,000	9,000
Total	293,701	289,000	109,000
Allocated from multipurpose reservoir operations	1,059,991	1,163,000	1,066,000
Total expenses before depreciation	1,353,692	1,452,000	1,175,000
Depreciation on navigation facilities	604,117	610,000	610,000
Depreciation allocated from multipurpose reservoir operations	786,332	790,000	794,000
Total expenses	2,744,141	2,852,000	2,579,000
Net expense of navigation operations	2,725,990	2,827,000	2,548,000

The TVA Act of 1933 assigns to TVA the primary Federal responsibility for improvement of the Tennessee River and its tributaries for navigation. The 9-foot navigation channel is now complete and the Tennessee Valley is linked with the vast industrial and trade area served by the inland waterway system. The operation of the navigation channel is a cooperative enterprise of TVA, the Corps of Engineers, and the United States Coast Guard. Navigation terminals and barge facilities are operated by private enterprise.

Traffic on the Tennessee in 1953, the most recent year for which official figures are available, was the highest on record—7,119,227 tons and 1,020,628,819 ton-miles. These figures are, respectively, 22 and 28 percent above corresponding figures for 1952, the year of next highest traffic. From this record volume of traffic, shippers realized an estimated $12 million in transportation savings. This amount exceeded the combined navigation operations costs of the Corps of Engineers, Coast Guard, and TVA by some $8.5 million, which represents a return of 5.5 percent on the original investment in navigation facilities on the Tennessee. Predicted traffic for 1954 will exceed that for 1953 by about 400,000 tons and nearly 200 million ton-miles, according to preliminary estimates.

1. Study and development of river transportation, $69,000

The request for study and development of river transportation during 1956 is $69,000, which is substantially below the 1954 and 1955 figures.

TVA is directed both to improve and to promote navigation in the Tennessee River. Through the construction of navigation facilities, TVA has provided the improved channel authorized by Congress. Through various studies and engineering planning, it has sought full use of the river for transportation service.

Through fiscal year 1955 TVA will perform engineering work in order (1) to insure that existing navigation facilities are operated, maintained, and modified or improved to meet the needs of present and prospective navigation; and (2) to develop data and provide assistance in the development and utilization of river terminals, floating equipment, and industrial waterfront lands consistent with TVA's multipurpose river operations. TVA will also maintain navigation markers on secondary channels and prepare and maintain maps of the mainstream reservoirs, maintaining close liaison with the Corps of Engineers and the United States Coast Guard.

TVA has also conducted transportation economic research and given advisory assistance to shippers and barge lines upon request to help them make best use of the navigation facilities of the improved Tennessee River. Transportation economic studies have fallen generally into three broad categories as follows:

(*a*) Studies of commercial opportunities presented by the Tennessee River.

(*b*) Studies of economic, rate, and policy barriers to transportation use of the Tennessee River and integration of the river with other transportation facilities.

(c) Investigations of policies, rates, and facilities of all modes of transportation as they affect the development of the resources of the Tennessee Valley.

Beginning with fiscal year 1956, TVA will perform limited continuing engineering work, principally appraising (1) needs for improvements or additions to facilities; (2) the effects of proposed public and private structures on navigation; and (3) requirements of navigation in the multipurpose program. Essential data will be developed and limited information given to barge lines and other shipping interests on channel conditions and terminal sites. Studies are also made to provide estimates of transportation savings to shippers resulting from use of the Tennessee River for program appraisal.

2. Operation of public-use river terminals, $23,000

During World War II the TVA built four public-use general commodity terminals. These facilities are located at Knoxville and Chattanooga, Tenn., and at Decatur and Guntersville, Ala. Being the only public-use facilities at those ports, they make it possible for many small shippers to use the waterway. Three of these terminals are licensed to private operators. The fourth, at Guntersville, is leased. TVA receives a percentage of the gross income from the operation of these terminals.

Under legislation recently passed by the Congress and approved by the President on September 1, 1954, present license agreements will be converted to leases, and all lessees will be given an opportunity to purchase the facilities they operate when their level of business and other requirements of the criteria of sale are met.

TVA owns and operates a coal terminal at Harriman, Tenn. It is expected that 75,000 tons of coal will be handled through this terminal during fiscal year 1956. As soon as the volume of business makes operation of this facility attractive to private enterprise, TVA hopes to dispose of it under a lease-purchase agreement.

Direct TVA expense for terminal operation in 1956 is estimated at $23,000. Income is estimated at $31,000 for the year.

3. Power for lock operations, $8,000

Navigation locks on the Tennessee River are operated by the Corps of Engineers. TVA furnishes the power required in their operation at no cost to the Army. It is estimated that the cost of electric power will be $8,000 in 1956.

4. Maintenance of navigation facilities

No funds are requested for this activity for 1956.

Mr. RABAUT. No funds are programed for maintenance of navigation facilities according to the justifications on page 37.

What is this program and what is the effect of dropping it?

Mr. PHILLIPS. We didn't have that last year, did we?

Mr. WAGNER. There was only $658 in 1954. There is nothing this year.

I believe that was for maintenance work which we did on some public-use terminals which we built and operated for a time. Those terminals have since been leased to private operators with the provision that they can purchase them.

Mr. RABAUT. What have you done about leasing those terminals?

Mr. WAGNER. They are leased, sir.

Mr. RABAUT. Leased to advantage?

Mr. WAGNER. We think so; yes, sir.

Mr. RABAUT. You might tell us a little about it. What kind of revenue do you get from them?

PUBLIC-USE RIVER TERMINALS

Mr. WAGNER. Let me say first, Mr. Chairman, that these terminals were built during the war primarily to be sure that the port cities which they served, where terminals were not then available, would be able to handle river shipping as a relief for the transportation system if they should be needed.

They were made available to the general public so that any shipper, whether he had a waterfront location or not, could use river transportation.

As soon as it was possible to do so we requested and Congress enacted legislation to permit us to lease them with a provision that they might be purchased.

We have a requirement in our arrangements with the people who now lease them that they shall be kept open to the general public for a period of at least 10 years after purchase, and there is a requirement for payment to us of part of the revenues. When traffic has reached a certain specified point for each terminal which would be a normal traffic for that port, the option to purchase can be exercised.

(Discussion held off the record.)

Mr. RABAUT. Do you think it is a good deal for the Government?

Mr. WAGNER. Yes, sir; I think it is.

Mr. RABAUT. How much money do we have involved in those terminals?

Mr. WAGNER. The original cost was about $800,000.

INVESTIGATION OF FUTURE PROJECTS

Mr. RABAUT. Investigation of future projects. On page 24 of the justifications, in the last paragraph, a number of projects are mentioned. Have any of these projects been investigated previously, and then set aside for any reason?

Mr. WESSENAUER. The extension of Fort Loudoun Dam had been proposed during World War II for possible construction, and some investigation work had been done at that time. In 1942 funds were appropriated for that project but work was suspended by the War Production Board. No work has been done for quite some time on it.

Considerable work has been done investigating the Melton Hill site on the Clinch River.

PROJECT AUTHORIZATIONS IN TVA ACT

Mr. RABAUT. Inasmuch as you say that I will ask this question: How much of the funds specified here are for projects that are unauthorized?

Mr. WESSENAUER. The TVA Act authorizes projects in the Tennessee River Basin. Except for the Fort Loudoun extension none of these projects have had initial appropriations for construction.

Mr. RABAUT. Do they come under the definition of "authorization"?

Mr. WESSENAUER. They come under the definition of the authorization under the TVA Act; yes, sir.

Mr. VOGEL. There is a general authorization in the act, sir——

Mr. RABAUT. Do you have a further statement to add to that?

Mr. WESSENAUER. There is a general authorization to TVA for the development of projects in the Tennessee River Basin, and therefore these projects would fall under that general authorization.

Mr. PHILLIPS. Subject to appropriations by the Congress?

Mr. WESSENAUER. That is correct, sir.

Mr. RABAUT. General Vogel, have you something to say about it?

Mr. VOGEL. Yes, sir. In section 23 of the TVA Act it states that the President shall, from time to time, as the work provided for in the

preceding section progresses, recommend to Congress such legislation as he deems proper to carry out the general purposes stated in said legislation, and for the special purpose of bringing about in the said Tennessee drainage basin and adjoining territory in conformity with said general purposes (1) the maximum amount of flood control, (2) the maximum development of the said Tennessee River for navigation purposes, (3) the maximum generation of electric power consistent with flood control and navigation, (4) the proper use of marginal lands, (5) the proper method of reforestation of all lands in said drainage basin suitable for reforestation, and (6) the economic and social well-being of the people living in the said river basin.

I understand that that authority or that delegation by the President has been given to the Board of Directors.

Is that correct, Mr. Swidler?

Mr. SWIDLER. That is right, General Vogel, but I believe the appropriation authorization as such is in section 27, which reads: "All appropriations necessary to carry out the provisions of this act are hereby authorized." So in the case of TVA projects all that is required for projects for the improvement of the Tennessee River and its tributaries is for this committee to act and for the Congress to appropriate money.

Mr. PHILLIPS. That is limited to the Tennessee River, though, in that case?

Mr. SWIDLER. It is on hydro projects.

BRINGING INVESTIGATIONS UP TO DATE

Mr. RABAUT. My point is this: Why should we be investigating projects that were investigated before and then thrown out or discontinued? Is there anything in here of that nature which is now being reinvestigated?

Mr. WESSENAUER. Sir, to the extent that some of these have been investigated before, the work to be done this coming year would be to bring the investigations up to date and to keep current the information we need in considering how to meet the additional requirements for the region.

Mr. RABAUT. Those which were investigated before, was the investigation dropped?

Mr. WESSENAUER. Yes. No investigation has been carried on in the meantime.

Mr. RABAUT. What is the reason for renewing the investigation if it was dropped before? For what reason was it dropped?

Mr. WESSENAUER. Work in the Fort Loudoun Dam extension was stopped when the War Production Board suspended its contribution. At the end of the war, it was not felt necessary to continue with that project at that time.

Other projects more desirable were proposed subsequently.

Those now have been built and we are looking ahead to the future requirements of power for the region and these are projects we are investigating now to see whether they are still justified for construction.

Mr. RABAUT. By what stretch of the imagination would something you dropped before, when the war effort was such that you wanted power in the worse way and you abandoned it then, would there now be some reason to renew that investigation at this time?

Mr. WESSENAUER. Yes, I think so.

Mr. RABAUT. Predicated on what grounds?

Mr. WESSENAUER. On the future need for power based on the additional developments that have taken place in the meantime.

Mr. RABAUT. How much money of this amount is in here for those types of investigations?

Mr. WESSENAUER. A total of $204,000.

Mr. RABAUT. All in that category?

Mr. WESSENAUER. No, sir.

Mr. RABAUT. That is my question. How many are in that category?

Mr. WESSENAUER. I don't have the breakdown here, sir.

Mr. RABAUT. Break it down and supply it for the record.

Mr. WESSENAUER. All right, sir.

(The information requested is as follows:)

FORT LOUDOUN EXTENSION, $21,000 BUDGETED IN 1956

Construction work was suspended on the Fort Loudoun extension project at the direction of the War Production Board in October 1942. Engineering investigations have been initiated in fiscal year 1955 to obtain up-to-date information regarding the feasibility of the project.

FLOOD-CONTROL OPERATIONS

Mr. RABAUT. Under "Flood-control operations," insert page 39 of the justifications into the record.

(The page referred to is as follows:)

A statement on flood-control operations follows:

Operation of the flood-control system on the Tennessee River consists principally of using storage space in upstream reservoirs for seasonal retention of excessive runoff and of regulating the discharges from reservoirs to rates of flow which can safely be handled by downstream channels and reservoirs. This system not only averts damage to cities and agricultural lands in the Tennessee Valley but also reduces flood crests on the lower Ohio and Mississippi Rivers. Regulation afforded by the Tennessee River system can reduce flood crests at Cairo Ill., by from 2 to 4 feet below those that would otherwise occur and by lesser amounts on the Mississippi River as far south as the mouth of the Red River. Since the first project in the TVA system was placed in operation (1936) regulation of TVA reservoirs to reduce flood crests has averted damage at the city of Chattanooga alone of about $53 million. Reductions of flood heights by nearly 2 feet at Cairo have been accomplished several times averting considerable damage to that city and to properties farther down the Mississippi River.

The major items of cost consist of a portion of the expense of operation of multipurpose reservoirs and depreciation of major structures. Neither of these requires a direct appropriation for flood-control purposes because fund requirements for operation of multipurpose reservoirs are included in the multipurpose reservoir operations program, and depreciation is an accounting transaction requiring no current outlay of funds.

The total expense of flood-control operations is estimated at $2,484,000 in 1956, compared to $2,556,000 in 1955 and actual expenses of $2,435,465 in 1954.

This table shows detail of the total expense of flood-control operations; actual for 1954, and estimates for 1955 and 1956

	1954 actual	1955 estimate	1956 estimate
Direct expenses	$130,058	$137,000	$166,000
Distribution of administrative and general expenses	4,402	8,000	8,000
Total	134,460	145,000	174,000
Allocated from multipurpose reservoir operations	1,071,598	1,179,000	1,074,000
Total expenses before depreciation	1,206,058	1,324,000	1,248,000
Depreciation on flood-control facilities	320,810	325,000	325,000
Depreciation allocated from multipurpose reservoir operations	902,826	907,000	911,000
Adjustment of prior years' costs	5,771		
Total expense of flood control operations	2,435,465	2,556,000	2,484,000

The activities which require appropriated funds include collection and analysis of flood data; studies to improve operations of the existing system; studies of potential projects which could affect flood control on the Tennessee River system; and technical advice and assistance to State and local governments to encourage their assumption of responsibility for solution of local urban and rural flood-control problems. The 1956 estimate for these activities is $166,000.

The estimates for collection and analysis of data and studies of the existing system and potential projects total $75,000 in 1956, the same as in 1955, and are based on streamflow occurrences experienced in an average year. When extremely high streamflows or repeated moderately high streamflows occur, special investigations, studies, and reports must be made on the flows occurring and the relation between water levels actually experienced and those which would have occurred without regulation must be established. Information thus gained not only is valuable to aid in determining guides for reservoir operations in future similar circumstances but also is necessary to provide facts to answer damage claims which may be asserted. If such high streamflows occur in either 1955 or 1956, the direct flood-control expenses might exceed the estimates, but in such an event the additional funds required would be provided by adjustments within the total budget.

TVA has a continuing interest in local flood-control problems because their solution is important to the development of the valley. In the Tennessee Valley, as in other parts of the Nation, little initiative has been taken by States and cities in assuming responsibility for local flood-control problems, partly because the Flood Control Act of 1936 and subsequent legislation assume for the Federal Government the major share of the financial responsibility in such problems. There is much that communities, counties, and States could and should do for themselves in these local flood situations. In many cases the construction of protective works is within the financial capability of the communities involved. The assumption by the State and the local community of a joint responsibility for the construction of flood-protection works of a local nature would relieve the financial burden of the Federal Government, encourage construction of such works when they are sound and economically justified, and increase the effectiveness of State and local zoning activities.

The results of the program started by TVA in 1954 to assist the States and local communities in their organization for flood protection are encouraging. Considerable interest in this program is being shown by the States of Tennessee and North Carolina. TVA is working closely with State planning agencies in those States. Flood history investigations and hydraulic studies have been made for several communities having flood problems in Tennessee, North Carolina, and Alabama. Flood profiles and maps showing areas in danger of being flooded were prepared to assist the Tennessee State Planning Commission in the writing of zoning ordinances. As a result of this work, the city of Pulaski, Tenn., on recommendation of the Tennessee State Planning Commission, has adopted a zoning ordinance which will go far toward reducing damages from local floods in that city.

The estimates include $62,000 in 1955 and $91,000 in 1956 to provide for continuation of technical advice and assistance to the States in an effort to encourage them to create and actively support agencies for planning local flood projects and providing State leadership in developmental projects. In 1956 TVA plans to intensify its work with Tennessee and North Carolina and to seek more active support of local flood-control activities by the State of Alabama.

Mr. RABAUT. There is a total of $2,484,000 programed here. This is $72,000 less than this year. What is the reason for that?

Mr. WAGNER. That is a combination of things. There are a number of activities here and some are a little bit more and some a little less.

Mr. RABAUT. It works out to that amount of reduction?

Mr. WAGNER. That is right.

If I may I would like to say a little bit about the flood-control program. I will try to be brief.

Mr. RABAUT. All right.

Mr. WAGNER. This, along with navigation, is another one of TVA's primary responsibilities. The Tennessee River flood-control system has since the operation of our first reservoir in 1936 averted damages of about $53 million which otherwise would have occurred at Chattanooga. This is nearly one-third of the total investment in the flood-control system.

LAND PROTECTED FROM FLOODING

In addition to that, the TVA flood-control system in conjunction with the levee system which has been constructed by the Corps of Engineers, provide complete protection for about 6 million acres of land on the lower Mississippi River and it provides for the less frequent flooding of some 4 million additional acres along the lower Mississippi River.

The maximum known flood in the Tennessee Valley covered about 743,000 acres of land there.

When our reservoirs are full at the summer level they cover about 464,000 acres, and 74 percent of that amount was subject to flood in this total of 743,000-acre figure I gave.

Mr. RABAUT. What percentage?

Mr. WAGNER. 74 percent.

Much of the land covered by these reservoirs was in mountainous and in rural areas, and of relatively low value.

In fact, I believe we have some figures, Mr. Chairman, on what the income in certain areas has been from that land as a lake as compared with what it was when it was farmland.

Mr. RABAUT. Suppose you supply those for the record?

Mr. WAGNER. Yes, sir.

(The information requested is as follows:)

In acquiring the reservoir for the Pickwick Landing project, TVA purchased 11,581 acres of land and the improvements thereon in the State of Mississippi, for which it paid $466,618.70. All of the land lies in Tishomingo County. Subsequently, TVA has sold 833 acres of the land for which it received $90,769. On the 833 acres, fixed improvements to the estimated value of $484,000 have been added. Thus the value of the land turned back to private ownership by TVA, plus the fixed improvements subsequently made on the land, represents a potential restoration to the tax base of Tishomingo County of $574,800, or an amount of $108,200 in excess of the purchase price of the property removed from the tax base upon TVA's purchase of the 11,581 acres. This amount is in addition to the estimated $306,000 value of personal property in the form of boats and boathouses which the owners and users of the 833 acres have placed along the Mississippi shore, and is also in addition to the in-lieu-of-tax payments which TVA annually makes to Tishomingo County.

COST OF ANALYZING OPERATIONS OF TVA RESERVOIRS

Mr. RABAUT. The direct expense item has been increased from $137,000 to $166,000. Briefly explain what this covers.

Mr. WAGNER. The direct expense item covers in part the cost of analyzing the operations of our reservoirs.

As a flood goes through the system we known what elevation it reached. We make estimates to see what the elevation would have been without the operation of TVA's flood-control system, both to give us guidance in improving future operations and in the event we have damage claims to give us a factual basis to appraise their validity.

Mr. RABAUT. You keep track of the area, for instance, of the rainfall?

Mr. WAGNER. We have cooperative arrangements with the Weather Bureau. The cost of collecting rainfall data and streamflow data are in another category of the budget. They are in the multipurpose reservoir operations category, the cost of which is allocated between navigation, flood control and power.

In addition to the engineering studies of our flood-control operations——

Mr. RABAUT. In 1954 you spent $130,000?

Mr. WAGNER. Yes.

Mr. RABAUT. Then you got the camel's nose up to the tent to $137,000, and now you are taking a jump to $166,000, and next year I suppose it will be $200,000.

What is going on?

PREVENTION OF LOCAL FLOOD DAMAGE

Mr. WAGNER. The increase, Mr. Chairman, if that is what you want an explanation about——

Mr. RABAUT. That is what I want.

Mr. WAGNER. It is in the field of local flood-control studies.

This is an activity which we undertook only recently, and it is one which General Vogel described briefly in his opening statement.

There are many small cities and communities in the Tennessee Valley which are not within the area benefitted by the operation of the major dams.

Naturally, many of them have flood problems.

We have undertaken to provide to planning commissions, city engineers, and other people who may be interested the information which we have in our records as to the heights of floods in those areas and the heights which they might reach, so that those people can take this information into account in their own local planning.

We have had a very good reception to that program. The city of Pulaski, Tenn., took the information which we furnished and used it in framing a zoning ordinance to control future construction in areas that are subject to flooding.

If this method is put into effect, in a period of time an area subject to flood would not have in it any high value buildings or improvements and in a sense you might call this preventive flood control.

Mr. RABAUT. Off the record.

(Discussion held off the record.)

Multipurpose Reservoir Operations

Mr. Rabaut. Multiple reservoir operation. Insert page 47 of the justifications in the record.

(The page referred to is as follows:)

Schedule B–2.—*Multipurpose-reservoir operations (for fiscal years ending June 30, 1954, 1955, and 1956)*

	1954 actual	1955 estimate	1956 estimate
Income (incidental income)	$279,464	$260,000	$234,000
Expenses:			
Water-dispatching operations	525,503	552,000	545,000
Water-control investigations	207,651	231,000	235,000
Malaria control	484,043	505,000	476,000
Plant protection and services to visitors	939,775	1,011,000	899,000
Operation and upkeep of dam reservations	434,627	446,000	437,000
Operation of reservoir lands	699,975	749,000	718,000
System improvement studies	24,847	33,000	22,000
Other operations	31,840	32,000	22,000
Maintenance	290,194	387,000	221,000
Total direct expenses:			
Appropriated funds	2,009,591	2,204,000	2,000,000
Corporate funds	1,628,864	1,742,000	1,575,000
Total	3,638,455	3,946,000	3,575,000
Distribution of administrative and general expenses (schedule B–5)	203,329	229,000	234,000
Total expenses before depreciation	3,841,784	4,175,000	3,809,000
Depreciation on multiple-use facilities	2,912,341	2,925,000	2,940,000
Total expenses	6,754,125	7,100,000	6,749,000
Net expense of multipurpose-reservoir operations	6,474,661	6,840,000	6,515,000
ALLOCATION TO PROGRAMS			
Navigation operations:			
Net direct expenses	998,992	1,094,000	996,000
Administrative and general expenses	60,999	69,000	70,000
Depreciation	786,332	790,000	794,000
Total	1,846,323	1,953,000	1,860,000
Flood-control operations:			
Net direct expenses	1,010,599	1,110,000	1,004,000
Administrative and general expenses	60,999	69,000	70,000
Depreciation	902,826	907,000	911,000
Total	1,974,424	2,086,000	1,985,000
Power operations:			
Net direct expenses	1,349,400	1,482,000	1,341,000
Administrative and general expenses	81,331	91,000	94,000
Depreciation	1,223,183	1,228,000	1,235,000
Total net expenses	2,653,914	2,801,000	2,670,000
Total	6,474,661	6,840,000	6,515,000

A statement on multipurpose reservoir operations follows:

The reservoirs created by TVA dams are managed primarily for purposes of navigation, flood control, and power. Consistent with these purposes, the reservoirs also serve other interests including programs of other public agencies. The activities relate to the management, operations, and maintenance of 19 multipurpose reservoirs. These reservoirs have approximately 10,000 miles of shoreline. TVA has responsibility for managing or administering use limitations on approximately 430,000 acres of land surrounding the reservoirs.

Estimated direct expenses for multipurpose reservoir operations are $3,575,000 for 1956, compared to the 1955 estimate of $3,946,000. Income is estimated at $234,000 for 1956 and $260,000 for 1955. Of the total 1956 estimate of direct expenses, $1,575,000 will be financed from corporated funds and $2 million from appropriated funds.

During the past several years, activities in this program have been reviewed carefully and a number of significant economies have been made. These savings however, have been obscured by the general rise in salaries and other costs. In 1956 there were 16 multipurpose reservoirs in operation. During 1955 and 1956 there will be 19 in operation. Costs of many of the activities in this program are closely related to the number of reservoirs.

TVA's multipurpose reservoir operating costs are carried in a single program category, although for accounting purposes they are distributed to the three primary programs—navigation, flood control, and power. The costs are distributed approximately 30 percent to navigation, 30 percent to flood control, and 40 percent to power. The navigation and flood-control portions are financed from appropriated funds, and the power portion from corporate funds.

WATER DISPATCHING OPERATIONS ($545,000)

The Tennessee is the world's largest controlled river system. It provides more than 14 million acre-feet of useful controlled storage, a 650-mile channel for 9-foot draft navigation, and has installed hydroelectric generating capacity of about 3 million kilowatts. The system consists of 31 major projects, including 25 TVA-owned dams in the Tennessee Valley, 1 dam owned by TVA on a tributary of the Cumberland River, and 5 dams on the Little Tennessee River which are owned and operated by the Aluminum Co. of America in accord with water control instructions from TVA. All projects are operated according to instructions developed at TVA's central water control office at Knoxville, Tenn. Suboffices for collection and analysis of data are located at appropriate points in the Tennessee Valley.

Efficient dispatching of water through the reservoir system to serve most effectively the major programs of navigation, flood control, and power, and at the same time serve other important interests in a manner consistent with the needs of these three major programs, requires continuous knowledge of the amount of water stored in each reservoir, the amount flowing in streams, the rain falling, and that likely to fall in the next few days on each watershed. Close cooperation with the United States Weather Bureau and the United States Geological Survey insures full use of all data and services available from these agencies, thereby avoiding duplication. Because a large number of gages are needed to determine accurately rainfall amounts and intensities throughout the area, TVA maintains a network of 382 conventional-type rain gages and in addition utilizes, wherever feasible, 118 gages operated by the Weather Bureau. Under a joint agreement, the United States Geological Survey maintains 120 stream-gaging stations throughout the valley. The Weather Bureau by agreement with TVA furnishes daily and longer period forecasts of rainfall, operates an electronic flood routing unit to aid in forecasting streamflows, and supplies TVA with forecasts of light intensities, humidities, temperatures, and other meteorological factors needed in system operation. Forty-three special-type gages, developed and maintained by TVA, transmit automatically by radio stream heights and rainfall amounts from remote areas. All these data on rainfall, streamflow, and reservoir storage are assembled in a central office in Knoxville where a staff of some 14 employees analyzes the data and plans water-dispatching operations both currently and on a long-time basis. Instructions are transmitted through the power dispatching offices to the operators at each dam who operate the facilities that store or release water. A daily river bulletin, published cooperatively with the United States Weather Bureau, is distributed to persons and firms concerned with stream and reservoir elevations. Data are exchanged regularly with the Corps of Engineers in scheduling Tennessee Valley reservoir system outflow to provide maximum benefit to the Ohio and Mississippi Rivers during both low flow and flood flow periods. Gate settings at dams, charged to this activity, are performed as part-time tasks of personnel regularly employed at the dams.

WATER CONTROL INVESTIGATIONS ($235,000)

This includes a variety of studies and investigations needed in connection with the operation of the multipurpose reservoir system. Owners of property adjacent to the reservoirs often claim that fluctuating water levels damage their farmlands or pollute their wells, and careful field engineering investigations must be made to determine the facts for use in possible litigation. Judged by past experience, this work in 1956 will require about 5 man-years. Sediment in the reservoirs reduces storage capacity; field surveys are made on each reservoir at intervals of about 5 years to determine the storage lost. During 1956 field sediment surveys will be

made on five reservoirs. In addition, office computations of sediment volumes will be made for reservoirs for which field surveys are being made in 1955. During periods of high streamflow, discharges over the spillways are compared with those predicted from model tests made before the dams were built for checking the propriety of design and indicating possible corrective measures for any adverse effects. These activities also include studies to determine the effects of impoundages and water-control practices on water quality and stream pollution and the feasibility of integrating TVA water releases with pollution abatement needs. They also include studies of the effects of impoundages and water-control practices on fish and waterfowl, and feasible water-control practices which may be employed to minimize adverse effects on wildlife and the development of commercial and sport fishing.

MALARIA CONTROL ($476,000)

Control of malaria associated with TVA reservoirs requires repetitive control measures such as elimination of shoreline vegetation by mechanical means and herbicidal applications, and larvicidal spraying with DDT; appraisal of control methods; and development of improved techniques. Permanent shoreline improvements (budgeted under "Additions and improvements at completed projects") and fluctuation of water levels make it possible to keep the level of repetitive operations much lower than would otherwise be necessary. Repetitive control measures are limited to 6 main-river reservoirs, where conditions are most conducive to the breeding of malaria mosquitoes. Control measures on other reservoirs are not scheduled but are done on an emergency basis when necessary. Program plans for 1956 on the 6 reservoirs include plant-growth control by mechanical and chemical means on 672 acres, drift removal along 15 miles of shoreline, maintenance of 204,300 linear feet of drainage ditches, application of larvicides by aircraft on 26,350 acres, and operation and maintenance of 10 dewatering areas involving 24,800 hours of pumping operations. Routine surveys and investigations to appraise the incidence of malaria have been discontinued. Such appraisals are being made largely by regular investigations by State and local public health agencies.

The 1956 estimate of $476 000 for malaria control is $29,000 below the estimate for 1955.

PLANT PROTECTION AND SERVICES TO VISITORS ($899,000)

Under normal peacetime conditions this category includes visitor reception services at TVA multipurpose dams and limited guard service to protect the properties from damage from fire and theft. In the fall of 1950, TVA developed in coordination with defense agencies and put into effect a more intensive plan of protection. That plan costs substantially less than the one used during World War II. On the basis of security information current in 1952 and 1953, TVA reduced the protection standard in those years below the 1950 level. Thus the manpower now assigned to protection of operating properties has been reduced to about the equivalent of that which prevailed prior to Korea. This personnel is so assigned, however, as to make property protection its major purpose. The 1956 estimate is based on a reduction of about 14 percent below present standards of protection providing for the equivalent of 27.1 full-time posts at 17 dams (no posts are established at Chatuge or Nottely)—an average of 1.59 full-time posts per project.

The 1956 estimate of $899,000 is $112,000 below the 1955 budget, reflecting the decrease in protection standards which is offset to some extent by increases caused by reassignment to operating expense in 1956 of costs distributed in 1955 to construction accounts for Douglas and Hiwassee projects when additional generating units were being installed at those projects.

OPERATION AND UPKEEP OF DAM RESERVATIONS ($437,000)

The 19 multipurpose dam reservations include 13,825 acres of land and 97 miles of gravel and hard-surface roads. A variety of operations is necessary for the upkeep of these roads and grounds. Roads, parking areas, and walkways are maintained; the public-use areas around the dams are graded, planted, and mowed; signs and guardrails are painted and replaced as necessary; janitorial and other services must be provided as required. Of the total acreage, about one-half is in natural or forest cover; about one-fourth is maintained as meadow or pasture, and about one-fourth is maintained for intensive public use.

The 1956 estimate for these activities is $437,000, which is $9,000 below the estimate for 1955.

OPERATION OF RESERVOIR LANDS $718,000

TVA owns about 305,000 acres of land around the margins of the multipurpose reservoirs and holds easement rights on an additional 125,000 acres above normal lake levels. These lands are used by a variety of individuals, agencies, and private groups for farming, grazing, parks, camps, boat docks, wildlife refuges and other purposes. Continuous surveillance is necessary to assure that the various uses do not conflict with the primary purposes of the reservoirs and are consistent with full public use of the reservoirs. Engineering investigations, surveys, and maps are made to maintain and preserve survey-control markers; to install and maintain property boundary and maximum reservoir-level markers; and to record changes in land ownership and physical developments on the land. The lands held by TVA are reviewed periodically in the light of changing program requirements; lands no longer necessary for program purposes are sold. Selling costs are included in this category.

The licensing of reservoir lands for agricultural and grazing purposes involves the public offering of available lands, the review of applications, approval of rental rates and crop plans, issuance of licenses, and collection of rentals. Approximately 1,500 licenses will be issued in 1956 for the use of about 36,000 acres for such purposes. Forest-land operation includes provision of forest fire and trespass control and marketing of timber and other forest products through sales of stumpage. Approximately 10,000 cords of pulpwood and 2,300,000 board-feet of timber are projected for sale in 1956.

The 1956 estimate of expenditures for operation of reservoir lands is $718,000, which is $31,000 below the estimate for 1955.

The 1956 estimate of income expected to be realized from operation of reservoir lands is $199,000. The corresponding 1955 estimate is $224,000. The decrease results from reduced land rentals and other fees, reflecting progress made in the disposal of surplus land. Estimates of income from sales of reservoir land are $361,000 in 1956 and $394,000 in 1955. This income is treated as a reduction in the investment in the reservoirs, and hence is not reflected in the estimates for the operation of reservoir land.

SYSTEM IMPROVEMENT STUDIES ($22,000)

Continuing studies are necessary to improve the water-control system in the Tennessee Valley and to provide a basis for further development. These activities include maintenance of a current inventory of the water resources of the Tennessee River Basin; preliminary study of possible future project sites and costs; geologic investigations on tributary streams; compilation and application of data for determination of the fundamental hydraulic features on which the planning, design, construction, and operation of the dams are based; and preparation and analysis of reports on special-design features which will serve as references and aids for future design work. The 1956 estimate for this work is $22,000, compared to $33,000 for 1955.

OTHER OPERATIONS ($22,000)

This category covers minor operating activities. The principal continuing activities are cleaning reflectors and replacing light bulbs along roadways at the 19 multipurpose projects; studies of allocation of the system investment among the 3 major purposes; and the determination and review of service lives of structures and equipment in order to fix proper depreciation rates. The 1956 estimate for these activities is $22,000, compared with $32,000 for 1955. The decrease reflects completion in May 1955 of the study of biting insects breeding in TVA reservoirs and other minor changes in estimates.

MAINTENANCE ($221,000)

Maintenance activities consist mainly of painting spillway gates; maintaining spillway gate-operating devices and other equipment items and structures at the multipurpose dams; and maintaining fills on relocated highways and railroads affected by adjacent water. Maintenance of certain earth fills is required under the terms of contracts entered into with the owners of the highways and railroads when TVA dams were built. Maintenance costs vary from project to project and from year to year. The estimate for 1956 of $221,000 is $166,000 less than that for 1955. Estimated maintenance requirements for the various dam struc-

tures are $146,000 less in 1956 than in 1955, reflecting scheduled completion of major repair jobs at Wilson and Chickamauga Dams. Requirements for maintenance of highways and railroads are expected to be $20,000 less in 1956 than in 1955.

Mr. RABAUT. A total of $3,575,000 is programed for direct expenses. This is a reduction of $371,000 below 1955 program.

WATER-CONTROL INVESTIGATION

The only increase shown is for water-control investigation. Why is this necessary?

Mr. WAGNER. Mr. Chairman, that increase is $4,000 in a total amount of $235,000. Salaries have been going up in recent years. I am not sure that that is what that increase is, but I expect that it is probably a good part of it.

Mr. VAN MOL. It is a small amount. It may be some increase in travel. It is a collection of small amounts of that kind.

MALARIA CONTROL PROGRAM

Mr. RABAUT. The justifications explain that the malaria control program is conducted on an emergency basis. Under those circumstances, do you usually find it necessary to use all of the funds appropriated? Also, how much has been appropriated and how much spent in each of the last 5 years?

Mr. WAGNER. On most of the TVA reservoirs, repetitive control measures are not regularly scheduled. But water conditions and weather conditions which are favorable to an unusual concentration of mosquitoes may sometimes occur. In such a case it is necessary to go in and spray some of those areas with DDT—to dust them. That would add to our cost.

Mr. RABAUT. Supply for the record how much has been appropriated and how much spent in each of the last 5 years.

Mr. WAGNER. We will do that.

(The requested information follows:)

	Estimates to Congress		Actual expenditures
	Original	1 year later	
Fiscal year 1950	$975,000	$893,025	$826,500
Fiscal year 1951	892,850	777,000	650,180
Fiscal year 1952	720,000	720,000	597,399
Fiscal year 1953	690,000	660,000	551,857
Fiscal year 1954	660,000	559,000	484,043

NOTE.—Expenditures for 1950 and 1951 were financed from nonappropriated funds. About 60 percent of expenditures for 1952, 1953 and 1953 were financed from appropriated fund.

RECREATIONAL USE OF THE RESERVOIRS

Mr. KIRWAN. What do you say the recreational end of it on the lakes has amounted to?

Mr. WAGNER. There is an investment of about $48 million, private investment, in boats, docks, cabins, resorts, and so forth along the waterfront.

Mr. KIRWAN. About $48 million?

Mr. WAGNER. Yes, sir.

Mr. KIRWAN. That is just on the water alone. You have automobile parks also?

Mr. WAGNER. Yes, along the shore.

Mr. KIRWAN. They must have done pretty fair down there between cheap transportation and cheap power. Is that correct?

Mr. WAGNER. Yes.

NATIONAL IMPORTANCE OF RESOURCE DEVELOPMENT

Mr. KIRWAN. And I am for it. I think the General made the statement—General Vogel, did you say you were for dividing it up throughout the country?

General VOGEL. No; I do not think you understood me properly. I say these things which are being done in the way of marking secondary channels either should be discontinued here, or they should be done in other places where there are recreational facilities.

Mr. KIRWAN. That is what I mean.

General VOGEL. I did not mean to divide it up in any region.

Mr. KIRWAN. But it should be done in other places.

General VOGEL. It should be done in other places as a matter of policy.

Mr. KIRWAN. If we have a policy in one place, it should be spread around the United States?

General VOGEL. That is correct.

Mr. KIRWAN. That is the same as dividing it up.

Mr. JENSEN. Equality of treatment.

Mr. KIRWAN. You built two reservoirs, I think, in Youngstown, Ohio?

General VOGEL. Yes, sir.

Mr. KIRWAN. That cost something around $6 million and probably saved the Government, since they were built, $60 million. They were built back in 1942 and finished in 1944, but I saw the traffic that followed, every year the whole steel industry had work. In 1920, the Youngstown District was the third ranking district in the United States. It was paying more taxes to the United States Treasury than five States. And all that was ever spent there by the United States Government it seems was $6 million. That is what I am talking about—dividing it up a little.

Now we are down to fifth in the steel industry; we have been passed by two more areas that have put us in the ashcan, and I would like to see this thing spread out a little over this Nation.

I am for developing this country. Every dollar spent on public or private power, I am for, because I maintain that every dollar invested in America is going to come back to you, therefore I am in favor of spending it. But all that is in the budget now for public works in Ohio, which I think ranks third or fourth in paying taxes to the Nation, is $5 million. I am not talking about the Ohio Basin Valley. As you know, that runs from the Allegheny in Pennsylvania all the way down to Kentucky. I am talking about what is spent in the State of Ohio—something like $5 million in the budget this year. And the Lord knows we need it and need plenty out there; the way everything seems to be going somewhere else. I think they should spread it around a little. I mean that in all sincerity.

General VOGEL. I think you have my point exactly. I am not talking against doing those things; I merely think it is my obligation to tell you what we are doing in this case that is not being done in other places. You make the laws; we do not.

Mr. KIRWAN. We make the laws, and we are not holding anybody else responsible. And I say it has developed the country so it makes it possible to build something like TVA. They could not build that in Ohio. They were asked to dredge Ashtabula Harbor at a cost of $5 million, and they are going to have that ready when the St. Lawrence Seaway makes its appearance in 5 or 6 years from now.

General VOGEL. That used to be one of my projects, too.

Mr. KIRWAN. Private interests have built two piers in Ashtabula at a cost of $6 million and they are now dredging the harbor. They do not ask the Government to do the dredging; they are going to do that themselves. They are paying $400,000 to dredge the inner harbor, and now they do not care if the St. Lawrence Waterway ever shows up; we have enough business for these piers. All we ask the United States Government to do is to spend $200,000 to dredge the outer harbor, for which the budget does not put any figure in, after their putting in $6 million of their own money, private capital, to build the piers and dredge all around the piers. Now they have to wait, according to the budget, until the St. Lawrence is finished 4 years from now before the dredging of the outer harbor, to meet the $6 million investment, goes forward. I do not think that is fair. I would like to see us get in a position up North where we can do what you said they do down South.

While I am talking, I remember being in the Imperial Valley in California in 1910, when it was nothing but a desert.

Mr. PHILLIPS. Were you there when the flood was there?

Mr. KIRWAN. I do not know whether I was there when the flood was there or not, but I know I was there and all that was there at that time was just a wild desert. It is a paradise today with the water that was put in by the United States Government. I know of a finer place than that, where the United States Government is doing a job now; that is in Florida, in draining the Everglades. Flagler went broke; he spent $100 million and went broke, and then Bok spent $50 million, and now we are going to do it. That is the only place in the world where they have palm trees in the front yard and gondolas in the backyard. But it is going to be done with taxpayers' money and the taxpayer is going to be the fellow to pay the bill.

SCOPE OF TVA ACT

Mr. JENSEN. Of course we just have one law which governs the Tennessee Valley and that is the law which established the Tennessee Valley Authority, and that law is all inclusive. When that law was passed, we delegated the regular responsibility of the Congress of the United States to the Tennessee Valley Authority to the end that it was possible for the Tennessee Valley Authority to start any project it sees fit to start and to spend millions of dollars without coming to the Congress and asking authorization in the regular manner which other projects in every other part of the country are required to do.

As I said before, it is an autocratic empire within our United States with full authority to do as they darn well please with the money that

Congress appropriates, and with the authority to go ahead and make investigations, plans, and construct anything they want to, as long as they can get the money from the Congress to support it. If I had my way, I certainly would recommend that henceforth no project of any consequence be started in the Tennessee Valley without specific authorization by the Congress of the United States.

This thing is going too far, and we had better start, the Representatives of the people had better start, to take a hand in this thing before it gets out of hand completely.

SALES PROMOTION EXPENSE

Mr. PHILLIPS. What was the page of that item that had sales promotion?

Mr. WESSENAUER. Page 42.

Mr. PHILLIPS. There has always been a question about this sales promotion item which, as the chairman pointed out, asks for $676,000 this year with reimbursements of $130,000.

First of all, is that reimbursement on schedules of some kind, or voluntary contributions?

Mr. WESSENAUER. No, sir; it is under contract.

Mr. PHILLIPS. Under which you do a specific thing?

Mr. WESSENAUER. We provide a specific service; yes, sir.

Mr. PHILLIPS. All the year around?

Mr. WESSENAUER. That is right.

Mr. PHILLIPS. And it costs about $546,000 net. Now there always is the question—and I address this to you, General—as to why you need sales promotion at all; because, by observation, I would say, this item provides for a certain amount of entertainment, which is desirable, of people coming to visit you.

EXPENSES RELATING TO VISITORS TO TVA PROJECTS

General VOGEL. No, sir; we do not have any entertainment fund.

Mr. PHILLIPS. What do you do when those friends of TVA get out material, or the backyard group from Chicago that published a pamphlet, somewhat accurate? From where does the money come to take care of them and take them around TVA and show them the works?

General VOGEL. The groups that come there as visitors from foreign countries and sponsored groups, which are official organizations of this Nation, are taken care of under the public relations fund.

Mr. PHILLIPS. How much is the public relations fund for 1956.

Mr. WAGNER. The Information Office budget for 1956 is $175,000?

SALES PROMOTION EXPENSE

Mr. PHILLIPS. Then I think, more than ever, there should be some question raised regarding what you call sales promotion; because here you have a monopoly. There is no other power to be sold in that area but yours; you establish the price at which it can be resold. Now you certainly do not have to do any public relations or publicity work to sell to those people. They have nowhere else to get it.

The chairman brought out in his questioning that the cost to

TVA for public relations work was about 37 cents, and the cost to a private utility was, you said, to be over $2.

Mr. WESSENAUER. $2.61 per consumer, sir.

Mr. PHILLIPS. I do not know the source of that $2.61, nor do I know whether items involved in each are comparable, because I suppose what TVA separates and put in public relations work and sales promotion would be combined in the $2.61 for the private utility. But my point is that the utility has competition; the utility in many instances does have to compete with other sources of power, or with various factors which the TVA does not have to compete with; consequently, it would seem and it always has seemed questionable as to why you should spend any amount of money for sales promotion.

You contend your rates are low; you contend that in navigation you save $14 million a year over the lowest competitor. Do you mean you are having great difficulty in going out and selling the idea to the people of the Tennessee Valley that they should use as a means of transportation your industrial projects on which they could save $14 million, or that they should use your power to light their houses, when no other power is available, or to use your power to heat their houses, when they are getting it for 4 mills, which is very much less than the nationwide rate for heating power? I mean why do you have to have a sales promotion program at all?

Mr. WESSENAUER. We believe, Mr. Phillips, that each power system has a responsibility to the customers it serves to supply them with the kind of information which would help them to make the most effective use of the electricity which they buy.

Mr. PHILLIPS. But you have $175,000 for public relations.

Mr. WESSENAUER. That is a different subject altogether. This has to do with the users of power.

General VOGEL. The other money is, you might say, for generally selling TVA to the public. This is specifically related to power.

Mr. WESSENAUER. Our public relations relates to requests for general information about TVA mainly from without the area.

Mr. PHILLIPS. How many customers do you have now?

Mr. WESSENAUER. The total number of customers in the area is 1,370,000.

Mr. PHILLIPS. But you are giving me the number of users through your distributors.

Mr. WESSENAUER. That is right.

Mr. PHILLIPS. And you gave us 150 distributors.

Mr. WESSENAUER. That is right.

Mr. PHILLIPS. Actually, then, instead of being 37 cents, you are actually spending $4,000 per customer, or else you are paying the bill for resellers, that is, for distributors, which is ordinarily borne by the distributors.

That prompts me to ask how much in addition are they paying for public relations or sales promotion?

Mr. WESSENAUER. I think I gave the figure that TVA and the distributors together are spending about $1.50 per ultimate consumer. That is per 1,300,000 consumers.

Mr. PHILLIPS. As against the $2.61?

Mr. WESSENAUER. As against the $2.61 which the utilities report.

Mr. PHILLIPS. Still you have not answered my question of how much you are spending per individual customer that you have, and I make it $4,000, which is a long way from 37 cents.

Mr. WESSENAUER. Let me be correct. I was speaking about the 37 cents per ultimate consumer. I did not represent it to be anything else.

Mr. PHILLIPS. But that is not your responsibility, is it?

Mr. WESSENAUER. Yes; I believe we have a responsibility to provide such services. We advise the local distributors on promotion programs which will assist primarily the rural and domestic consumers. For example, we have numerous inquiries from State agencies working in the field.

Mr. PHILLIPS. From other States, or Tennessee? You mean agencies in the area?

Mr. WESSENAUER. In the area. For example, Mississippi recently has been working out a cooperative program of getting running water in the farm home. That requires pumps and installation of the necessary piping leading to improved sanitation. Through our planning assistance which we provide these local agencies, they have been able to improve farm living by pushing the sale of pumps and water systems.

Mr. PHILLIPS. There is no objection to that on my part, but I would suggest that every farm magazine you pick up in the United States is devoting time and money to that and every farm bureau center and every grange, and every other organization is conducting meetings and tours and demonstrations on farms of these things which, unless they choose to write in to you, the material you furnish to them makes your expense here a completely duplicating expense. I think if you confined yourself to the customers you have, plus those groups that are doing the same sort of sales work for you, you would have a reasonable request of the committee; but I do not think that request of $676,000 is reasonable.

Mr. WESSENAUER. I think you ought to recognize that in this case the money is provided from the revenues received from these customers of ours. They feel that we ought to share in the efforts which are made to help their customers make a more effective use of the electricity.

Mr. PHILLIPS. When you get right down to bedrock, the reason you are doing that and the reason you have to do it, which is not the custom—that is the custom would be for the seller to carry on the campaign; but you are not the seller; you are the supplier to the seller; you are the wholesale seller, and if you permitted them to charge the amount of money which they could charge and which any other distributing agency would charge, you would not have to spend this money; therefore the taxpayers would not have to subsidize you for it. They would collect it from the sale of current, a fraction of a mill. And they would charge it and the customer would pay it and, in the long run, would pay it because he felt it was reducing his own cost by increasing the distribution of current.

Mr. WESSENAUER. But the customer is already paying this. This is part of the cost of operating the power system.

Mr. PHILLIPS. If the customer is already paying it, we will just cross it off here?

Mr. WESSENAUER. This is out of money which they pay us. That is how they pay it. This item is not an appropriation request; it indicates we will be using some of the money which they pay us to carry on this activity.

Mr. JENSEN. If the gentleman will yield, 2 years this coming October I was in West Berlin along with some other members of the committee which was going around that part of the world to see what the other nations were doing with the money that we had been giving to our so-called friendly nations, and we visited a great exhibition in West Berlin. It reminded me of a State fair. All of the NATO countries had an exhibit there, including the United States, if you want to call it an exhibit. We had the largest building on the grounds. We went into that building and it was dark. We were led around by guides into a moving-picture show, and that moving-picture show was about TVA. This was about 2 o'clock in the afternoon, and I think there were about 10 people looking at it.

Then we were led out of that part of the building into another part of the building where there was a relief map, a flat map made of wax paper, showing the Tennessee Valley, showing the hills and the rivers and the dams and the whole story, and there was a man explaining all the things about the Tennessee Valley. That was all there was in our exhibit, while the other nations had very wonderful exhibits. The buildings were decorated, lighted, and their flags were flying over all of the buildings. We did not even have an American flag flying over our building. I asked why and the people in charge said, well they thought it best not to put on any show, since we were the big brother. But I have often wondered who paid the bill to put on that TVA exhibit. I am wondering if that was part of your sales promotion program and the expenses of that exhibit were borne by TVA.

Mr. WESSENAUER. I am sure it was not borne out of the sales promotion expense.

General VOGEL. I think the sales promotion is exactly as Mr. Wessenauer stated it; it has to do with promoting the sale of power in the Tennessee Valley, and these other things you are speaking of come under public relations. And there is no question that the Tennessee Valley Authority has been widely advertised. We receive a great many visits from foreign visitors during the year and it puts quite a burden upon us to take care of those people, to escort them to the projects, give them the necessary booklets, educate them in the work that is being done.

I have some figures here. This, I think, is just in Knoxville. In 1951, TVA——

Mr. JENSEN. General, the thing I want to find out is did TVA pay for sending that exhibit over there.

Mr. WESSENAUER. I do not believe so, sir.

Mr. WAGNER. I have no knowledge that we did.

Mr. JENSEN. I want to know for sure.

Mr. WAGNER. What year was it?

Mr. JENSEN. That was 2 years ago, in 1953.

Mr. RABAUT. Suppose you look it up and supply the answer for the record.

Mr. JENSEN. Yes.

(The requested information follows:)

TVA did not participate in the preparation of an exhibit for the West Berlin Fair in 1953 or any other date. TVA has on several occasions cooperated with the United States International Information Administration of the Department of State, and the Department of Commerce, in the preparation of exhibits for display abroad. Cooperation in such cases has consisted of providing basic information requested by the other agencies, including data and photographs, which

they have used in preparing exhibits. Other than providing this material, TVA has made no financial contribution to the preparation, nor has it participated in the scheduling of exhibits displayed in foreign countries.

Mr. JENSEN. Now, then, another thing that struck us pretty much between the eyes was a big city in the State of Michigan had agreed to furnish a wonderful exhibit to that West Berlin affair and the people in charge over in Berlin, our people, had requested that the Michigan city be permitted to set up this exhibit, but they were told that they would take this TVA exhibit or nothing at all. Now I do not know that that TVA exhibit did us a lick of good in Berlin. If it did, I would like to know what it was.

General VOGEL. It certainly stirred up a great deal of interest.

Mr. JENSEN. I want to know where that money came from to pay for the sending of that exhibit over there and everything connected with it; because surely the TVA must have paid for it. If they did not—I see someone shaking his head over there, and I want to know for sure whether they did, or did not.

Mr. WAGNER. We will supply that, Mr. Jensen.

Mr. JENSEN. All right.

Mr. WAGNER. One of the things which may be illustrated by your statement is the very substantial interest on the part of foreign visitors in TVA, which General Vogel has mentioned. We have a great many of them referred to us by the State Department and, as a matter of fact, most of the visitors to the Tennessee Valley are arranged by others than TVA—the Department of Agriculture, the Department of Labor, the Department of State, the United States Information Service, the Governmental Affairs Institute, the American Council of Education, the Japanese Embassy, the Pakistan Embassy, 6 universities and 11 other public and private organizations in the month of April this year sent us 470 visitors.

Mr. JENSEN. We know all that, but was it the purpose of that exhibit over there to help those friendly nations of ours all over the world to take a pattern after TVA and then have our taxpayers pay the bill? We have been paying a lot of it and we are paying for reclamation, irrigation, hydroelectric power dams, all over the world.

Mr. PHILLIPS. Maybe they were looking for future customers, Mr. Jensen. Mr. Swidler says they can carry the transmission lines as far as they want, just as long as they tie one end of them to the hydroelectric grid. Is not that right?

Mr. SWIDLER. I do not believe I said exactly that, sir.

General VOGEL. I might say the TVA visitors alone cost us $30,000 last year, which is quite an amount for visitors.

Mr. JENSEN. I am wondering if that is part of the expenditure that the taxpayers of America pay for.

Mr. PHILLIPS. If I remember rightly, the TVA received favorable comment in the Yalta papers. Am I right? Were not you mentioned in the Yalta papers? I will try to look it up overnight and bring the reference tomorrow morning.

Mr. JENSEN. Here we are a great Republic, founded on free and private initiative and private industry, and we publicize TVA all over the world, apparently, which in my mind does not square with our American plan. But it was the only exhibit there and not even an American flag flying over the building. And that was the most disgraceful spectacle I ever saw.

Mr. PHILLIPS. I do not want to disappoint you, but I saw even a more disgraceful one in Paris in 1935 at the International Exhibition over there which was held on both sides of the Seine. We did not have anything until somebody sent over a few items from what must have been an exhibit used at a county fair, and then they borrowed some paintings and put them in a building with no flag, no care, and a broken window, and they stayed there for 2 years, because I was over there again in 1937. So I am afraid it is not only the TVA exhibits that are part of a poor sales promotion of our American way of life.

General VOGEL. If you wish the information Mr. Wagner referred to, I will have a staff memorandum prepared which will give that to you.

NAVIGATION EXPENDITURES AND TRAFFIC

Mr. PHILLIPS. If we now have Berlin supplied with current, may I come back to navigation and ask if you will please bring up to date, Mr. Wagner, your figures on navigation on the river? This was in last year and the year before. What I am working out is the actual expenditures on navigation in 1954 which, according to the tabulation here, were $2,725,990 and in 1955 your estimate for the presently unfinished year is $2,827,000, and your request for 1956 is $2,548,000, which reflects approximately $1,400,000 depreciation, which is strictly a paper transaction.

Now when you take the General Accounting Office report, you find by adding together all of the money spent on navigation in the area that $800,000 is spent by the Corps of Engineers, about $300,000 by the Coast Guard, about $300,000 by TVA, which is a total of about $1,350,000, and the 1948 GAO report, from which I read, shows an estimated expense for that year for navigation operations by these three agencies, Engineers, Coast Guard and TVA, of $1,690,375. That is without interest, amortization, or any portion of the multiple-purpose reservoir operation and if those, plus the fixed cost is added, the total cost to the United States would be well over $8 million. Now in 1952, and I remember this—Mr. Clapp testified that in 1952 the savings to the shipper was approximately $10 million. You testified this year it is $14 million.

Mr. WAGNER. I gave the $14 million figure for 1954.

Mr. PHILLIPS. There is reason to believe that estimate is somewhat open to question and I apply the same question to your testimony this year as to the saving of $14 million, as I applied to Mr. Clapp. What I want to know if I may, please, is the tonnage broken down into the various categories and broken down geographically?

For example, in the 1955 hearings last year, it was testified that the estimated Tennessee River traffic would be nearly 7 million in 1953. I think you repeated that today. Was that about right?

Mr. WAGNER. Yes, sir.

Mr. PHILLIPS. And that the ton-mileage is nearly 1 billion ton-miles. What I want to get is what portion of this tonnage was handled by the Kentucky Dam locks. Do you have that figure?

Mr. WAGNER. No, sir.

Mr. PHILLIPS. You can put it in the record.

(The information requested is as follows:)

Estimated traffic on the Tennessee River, calendar year 1954

	Net tons		Ton-miles	
	TVA	Other	TVA	Other
Aluminum		3,020		1,551,000
Asphalt		22,385		11,033,533
Automotive vehicles		42,880		15,351,040
Chemical products		39,445		12,501,355
Clay		44,000		1,320,000
Coal	3,842,885	972,110	428,970,500	128,236,660
Coke	38,435		9,954,665	
Construction equipment	1,250	305	454,250	78,955
Ferroalloys		51,900		6,039,725
Fertilizer		12,310		3,188,250
Forest products		51,765		7,177,325
Grain and grain products		367,515		136,756,480
Manganese ore		3,000		51,000
Molasses		6,510		4,218,480
Mussel shells		2,500		142,500
Peanuts		2,390		855,620
Petroleum products		804,165		372,154,595
Phosphate rock	29,165		3,937,275	
Pig iron		12,855		4,425,250
Pipe coating material		1,350		213,300
Salt		42,700		9,880,500
Scrap, iron and steel		13,110		2,754,900
Steel products	14,330	162,135	5,205,160	52,369,110
Steel vessels, new		6,195		1,883,280
Stone, sand, and gravel		1,864,005		45,468,450
Sulfur		39,305		18,285,995
Zinc		1,000		322,000
Total	3,926,065	4,568,915	448,521,850	836,260,665
Grand total	8,494,980		1,284,782,455	

Mr. PHILLIPS. The reported figure you gave I think will include traffic at Paducah, which did not originate on the Tennessee River above Kentucky Dam. Am I right?

Mr. WAGNER. It will include traffic between Paducah and the Kentucky lock. It does not include traffic at Paducah unless it moved on the Tennessee River; no, sir.

Mr. PHILLIPS. It does not include traffic out of Paducah itself?

Mr. WAGNER. No, sir. Only traffic that would move on the Tennessee River itself.

Mr. PHILLIPS. It would include from Paducah down to the lock on the Tennessee. I think we want to confine it specifically to TVA navigation operations. Now limiting the tonnage to the traffic carried from above the Kentucky Dam lock, what was the tonnage or the ton-miles for each of the materials for 1953 sand and gravel, oil, gasoline, coal, limestone, and the raw materials for chemical manufacture. Then, if there is any other, you can group them or indicate what they are.

I want to know what portion of each of the above items were for TVA operations (1) at its own power plants; (2) for TVA construction work; or (3) resulting from such operations as TVA fertilizer plants, and so forth. This is enlarging and bringing up to date the previous request.

The next question is what portion of the sand and gravel tonnage included in the reported traffic is short-haul traffic from the dredging point to the shore processing plants essentially, by way of an aside, because that is not normally considered river traffic. That represents hauling that could be carried on without the TVA navigation facilities, as little across-the-river hauls.

Mr. WAGNER. There is this difference, that the sand and gravel which moves now is able to move in larger and deeper draft barges and at lower cost than on the unimproved river; because the drafts available then were a foot and a half, 2 and 3 feet; whereas now there is 9 feet. So there is that difference.

Mr. PHILLIPS. I meant to ask whether with the large locks you would be able to increase the barge sizes.

Mr. WAGNER. The barges that operate on the Tennessee River now are the same barges that operate on other rivers. It is true there are some barges operating on the Ohio and Mississippi Rivers which cannot go all the way up the Tennessee, that can go only as far as Wilson Dam. Some barges 300 feet long are in use and there may be some which are larger.

Mr. PHILLIPS. Just to keep this in mind, the chairman suggests that I ask about the length of the locks; whether you would have to break up those barge tows.

Mr. WAGNER. Most of the tows that come into the Tennessee River have to be broken up into separate units to go through most of the locks. Some can get through the Kentucky lock and the Pickwick lock, which are 600 feet; but, beyond that, almost every tow has to go through in segments.

Mr. PHILLIPS. General, you were with the Corps of Engineers. Is it customary for the Corps of Engineers in figuring river traffic to include what I call short haul across-the-river haul?

General VOGEL. I do not think so.

Mr. PHILLIPS. I never knew it to be.

Mr. WAGNER. I imagine that sand and gravel traffic can be separately listed. It is included in the official statistics published by the Corps of Engineers and can be obtained from them.

Mr. PHILLIPS. You can mention whether or not that is in your estimate.

Mr. WAGNER. Yes, sir.

ESTIMATES OF TRANSPORTATION SAVINGS

Mr. PHILLIPS. The next question is, if the water carriers had to pay charges to cover interest on the investment and provide repayment of the cost allocated to navigation, as well as operation and maintenance costs borne by TVA, the Corps of Engineers and the Coast Guard, could they then compete ratewise with other common carriers?

Is your comparison by which you say $14 million is an accurate comparison correct, or do you operate on what I in simple language call a subsidy in such a charge as I am talking about, together with the added handling and transfer costs of, say, this estimated potential benefit?

Can you figure that out?

Mr. WAGNER. Mr. Phillips, the situation on the Tennessee in that respect is the same as it is on any river.

Mr. PHILLIPS. Well, not all rivers have quite the situation as on the Tennessee, with someone waiting to pick up the check.

Mr. WAGNER. There is no charge for the use of any of the federally improved waterways that I know of, and in that respect, the situation on the Tennessee is no different than it is anywhere else.

Mr. PHILLIPS. Yes, but in order to get a savings of $14 million to these people, they paid someone something. Did the charges include all of this such as the interest on the investment, the repayment of the cost alone to navigation by TVA, operation and maintenance cost borne by the TVA, the Corps of Engineers, and the Coast Guard?

Mr. WAGNER. The $14 million is the difference between what they paid to barge lines for shipping charges and for their terminal handling costs, as compared with the charges that they would have paid if they had used the next cheapest form of transportation.

Mr. PHILLIPS. Well, now, wait a minute. The barge companies, who did they pay it out to? Did they figure their cost? Who did they pay the money to? If they did not pay it to TVA, who did they pay it to?

Mr. WAGNER. The shippers?

Mr. PHILLIPS. Yes.

Mr. WAGNER. The shippers paid the transportation cost to the barge lines, of course.

Mr. PHILLIPS. Now, then, the barge lines, who did they pay something to? Anyone?

Mr. WAGNER. If you are asking me whether the barge lines pay for the cost of operating the waterway, and the fixed costs, they do not, except as they pay it in taxes.

Mr. PHILLIPS. That is the answer, I imagine, but all of these things that I am talking about are matters that are included in the cost of keeping the whole operation going.

Let me put it this way:

Are they paying the same proportion of the cost on the Tennessee River that they would on any other river in the United States?

Mr. WAGNER. Well, surely.

Mr. RABAUT. Off the record.

(Discussion off the record.)

Mr. PHILLIPS. This is what I was getting at:

From an accounting standpoint, if the purported savings in the transportation costs to which you testified, Mr. Wagner, is about $14 million, and if that is counted as benefits, why should not the actual or potential loss in business and net revenue to the railroads and other common carriers be debited as losses to the stockholders and the employees of those companies?

I suppose it is because you are not making out their balance sheet.

Mr. WAGNER. Mr. Phillips, I do not know that the other forms of transportation have been damaged by the waterway. We made some analysis of that question a few years back to try to determine whether some of the railroads most competitive with the waterways had a poorer earnings picture than other railroads, and there was no evidence to that effect whatever.

It is a fact that an industry which locates on a waterway to use water transportation usually generates other traffic for the rail and trucklines. As an example of that, a paper mill, which recently located on the Hiwassee River in the Tennessee Valley, assembles a part of its pulpwood by barge—and they are located on the waterway because they wanted barge transportation—but they also assemble part of it by truck, and they assemble part of it by rail, and the bulk of their finished product goes out by rail.

Mr. PHILLIPS. Let us go into this matter for a second which Mr. Rabaut and I were discussing off the record:

Here, you have the locks like the Soo locks, and the locks on the river. That is something to keep river navigation going, but now here you appear to be supplying to this paper mill a service, somehow, in your operations over and above that which is normal, and which is beneficial to a specific firm; is that right?

Mr. WAGNER. I do not believe so.

General VOGEL. There is a small coal tipple up the line, there.

Mr. RABAUT. There is what?

General VOGEL. A small coal loading point, but I do not know whether they handle a great deal of coal out of there.

Mr. WAGNER. This channel on the Hiwassee River is a general navigation channel, and is marked by the Coast Guard, and not by the TVA. I believe General Vogel had referred to some of these shallow draft channels which do carry supplies of pulpwood.

General VOGEL. That is what I was referring to.

Mr. WAGNER. They also carry ties, and other traffic.

STUDY AND DEVELOPMENT OF RIVER TRANSPORTATION

Mr. PHILLIPS. Let me ask you about your engineering, and transportation figures.

What is the line item? I think it is navigation, engineering, transportation, and economics; is it not?

Mr. WAGNER. What page is that on?

Mr. PHILLIPS. I do not have a page number; that is my trouble.

In 1954 you received $249,838 and for the current year you have an estimate of $245,000, and for next year your estimate is $69,000.

Can you identify it from that?

Mr. WAGNER. Yes, sir.

Mr. PHILLIPS. How much has been spent in that regard, and can you give me that figure, going back for a total of, say, 10 years, or something like that, and put it in the record?

Mr. WAGNER. Yes, sir.

(The information requested follows:)

Expenditures for study and development of river transportation, fiscal years 1945 to 1954, inclusive

1945	$93,669	1950	$227,500
1946	145,675	1951	206,407
1947	181,995	1952	247,667
1948	190,684	1953	252,606
1949	208,787	1954	249,838

Mr. PHILLIPS. This is what I asked the general a moment ago, but I think it was answered down at your end of the table.

If river navigation is such a wonderful thing, why is it necessary to spend hundreds of thousands of dollars trying to sell it to the public?

Mr. WAGNER. Mr. Phillips, we believe that the Federal investment in navigation ought to produce benefits to the public. Let me say, first of all, that these amounts which you read are not all spent to promote the use of the river, as I believe was indicated earlier; some of the funds are for navigation and engineering studies in connection with the operation and improvement of the channel.

Mr. PHILLIPS. Yes; but you keep on studying and studying and studying and studying, as the chairman pointed out during his interrogation, and you do not seem to have any terminal facilities in your investigations like you have on the river.

Mr. WAGNER. Mr. Phillips, we keep on operating the channel and the dams and reservoirs.

Mr. PHILLIPS. Why do you not lease out all your terminal facilities, and let those who lease them carry on all this extra and expensive work?

Mr. WAGNER. We do not have any terminal facilities.

Mr. PHILLIPS. None at all?

Mr. WAGNER. Except at our steam plants, where we unload our own coal, and we still have a small coal-loading terminal, which we have not yet been able to lease.

Mr. PHILLIPS. I just wondered if you thought it was reasonable to tax all the railroads and all the stockholders in order to go into competition with them.

Why do you not lease these facilities out and let the barge companies do their investigations, and investigate their own lines?

You know, over the years I have been on this committee I never really took any interest in this navigation end of it. This is the first year in which I have gone into it, and I am beginning to find out some things about it. I think, General Vogel, this presents an excellent opportunity to save some money.

General VOGEL. Well, sir, it may be.

Mr. WAGNER. If you are asking about leasing terminal facilities, we have none left to lease, except the one which I mentioned, and we do plan to lease that, if we are able.

Regarding the purpose of these expenditures—and compared to the investment in navigation of about $158 million, these expenditures are very small—it is to see that the taxpayers whose money has been invested in the navigation improvements get the greatest possible benefit from them.

General VOGEL. I may be able to help Mr. Wagner's case there, sir, by showing you a report on the so-called Barge Grain case which is significant to the Tennessee Valley and the Southeast, which involved a study made by the Tennessee Valley Authority in a court case entered into in order to help the river pay its returns on the dollar investment.

Mr. PHILLIPS. That is the trouble, Mr. Chairman. Whenever I ask any question, someone hands me a book of about 30 or 40 pages, and I will have to take this home and read it tonight and try to ascertain the answer.

Now, let us proceed to consideration of the item of flood control. I have 1 or 2 questions which I would like to reserve, if I may, because they are about specific costs per item, and I would like to take them up altogether, which, I believe, will save the time of the committee.

Mr. RABAUT. Off the record.

(Discussion off the record.)

USE OF ELECTRICITY FOR HOUSE HEATING

Mr. PHILLIPS. Mr. Chairman, I have a compilation of the estimated monthly use of TVA energy for house heating in fiscal years 1953 and 1954 which I would like to have placed into the record.

This compilation was supplied to Mr. Taber by the TVA on his request, and it gives the information on this subject, month by month, for fiscal years 1953 and 1954, and it reflects an increase between 1953 and 1954 of a jump from 883 million kilowatt-hours, to 1.1 billion kilowatt-hours.

Mr. RABAUT. Without objection, the compilation will be placed into the record at this point.

(The compilation referred to follows:)

Estimated monthly use of TVA energy for house heating in fiscal years 1953 and 1954

[Millions of kilowatt-hours]

	Fiscal year 1953	Fiscal year 1954		Fiscal year 1953	Fiscal year 1954
July			February	149	158
August			March	96	162
September	2	2	April	69	25
October	88	40	May	4	47
November	131	164	June		2
December	185	256			
January	159	244	Total	883	1,100

Estimated diversified demand for house heating

	Kilowatts (approximate)
Fiscal year 1953	550,000
Fiscal year 1954	700,000

NOTE.—The demand and energy use for house heating in the fiscal year 1953 were somewhat lower than they would have been with normal weather. The weather in fiscal year 1954 was not far from normal.

Mr. PHILLIPS. Here is the point which I am making:

In 1953, approximately 550,000 kilowatts, on an estimated basis, were used for house heating, and in 1954, that had jumped to 700,000 kilowatts, which is, among other things, more than the entire amount of power which we are talking about at the new Mississippi Valley Generating Co. plant where we are only taking about 600,000 kilowatts. Here we are using 700,000 kilowatts in the Tennessee Valley just to heat houses.

Mr. RABAUT. Mr. Phillips, I think I shall let you keep right on going this afternoon because that shows to me that there is an awful lot of electrical appliances which have been sold in this area in order to use all of this electricity, and that means business in other parts of the country.

Mr. PHILLIPS. Yes, sir.

Mr. RABAUT. That is where I get a little benefit out of TVA.

Mr. PHILLIPS. Yes; you get a benefit out of it.

Mr. RABAUT. I do not know if we make many electrical appliances like that in Detroit, but if we do, I know we get our share of it.

Mr. PHILLIPS. You had better find out what price the TVA purchasing agency is paying for them.

Mr. WESSENAUER. As a matter of fact, Mr. Rabaut, many of the electrical heaters are made in California.

(Discussion off the record.)

Mr. PHILLIPS. Previously, you had referred to an $8,000 item as power for the lock operation.

That is purely a bookkeeping item; is it not? You supply the power to the Corps of Engineers, and the Corps of Engineers uses it on the locks and when you say you want in the appropriation $8,000, you mean you want a bookkeeping transaction.

Mr. RABAUT. It comes out of their own money.

Mr. WESSENAUER. In order to keep the bookkeeping straight, we charge the navigation operation for power used at the locks, and the revenue received is reflected in the power operation.

Mr. RABAUT. The point which Mr. Phillips has raised is that it does not come out of the new appropriation.

Mr. PHILLIPS. That is correct.

Mr. WESSENAUER. It does come out of the appropriation, sir.

Mr. RABAUT. It comes out of an appropriation?

Mr. WESSENAUER. Yes; because we are expected to keep a strict accounting of our power operations, we must show the revenues we receive, and secure payment for all power service.

We ought to be entitled to credit such an amount as if it were a payment into the Treasury, if we do not get the cash through an appropriation for navigation.

Mr. RABAUT. Yes. You put the revenues back into the Treasury; is that right?

Mr. WESSENAUER. We actually make a cash payment back into the Treasury. I referred to that this morning when I said we have budgeted $59 million for that purpose.

Mr. RABAUT. Coming back to this $8,000 item, I thought that came out of your own operating funds, or the money which you earned, but that is an out and out appropriation?

Mr. WESSENAUFR. We charge everyone for the power which they use. In other words, this power, is in effect sold to the navigation program. They pay us $8,000 in cash, and that comes in with all other revenues from the sale of power.

Mr. RABAUT. And then you put that into the Treasury?

Mr. WESSENAUER. Yes, sir; we put that into the Treasury in accordance with schedules which have been worked out for the operation of the power program.

Mr. RABAUT. Then, you ask for a new amount in the budget to cover that amount?

Mr. WESSENAUER. Yes, sir; that is right.

Mr. RABAUT. Let us finish with this item tonight, because tomorrow we will start on fertilizer.

Mr. JENSEN. I have some questions regarding that.

Mr. RABAUT. The fertilizer portion of the program will come after we have a general statement from Mr. Curtis.

Mr. PHILLIPS. If you are going to close the hearings for today, and then proceed to the consideration of the fertilizer program tomorrow, Mr. Chairman, I have several questions which I would like to ask.

Mr. RABAUT. All right.

Mr. PHILLIPS. Gentlemen, these are questions which you can figure out, and can place the answers in the record for me.

FLOOD CONTROL COSTS

The actual flood-control allocation for 1954 was $2,435,465. That increased in 1955, on an estimate, to $2,556,000, and your request for next year is $2,485,000. That includes each year about $900,000, or a little more, for depreciation, which is again a bookkeeping charge.

Earlier this morning I covered the matter of the amount of productive land and so has Mr. Jensen, which has been put out of production by the flood control program, and I think it figured up to about 464,000 acres, of which testimony has shown that only about 70,000 of those acres could possibly have been subject to floods in 500 years.

Of the total investment which is allocated to flood control, what would the annual cost be at 2.5 percent interest, amortizing the investment in 50 years, and what would all the operation and maintenance and administrative costs be relating to flood control?

(The information requested is as follows:)

Current depreciation provisions assume a composite useful life of 84 years for TVA flood-control facilities. Assuming depreciation on a straight-line basis for 84 years with interest at 2.5 percent on the undepreciated investment, the average annual cost for interest and depreciation would be $4.5 million. The operating, maintenance, and administrative costs relating to flood control now average $1.3 million per annum.

ACREAGE FLOODED BY RESERVOIRS

Mr. PHILLIPS. Have you estimated the total acreage of land which has been taken by TVA for its multipurpose project developments?

Of the acreage taken, how much is below the normal flood-control pool level? Do you know if any of it is?

Mr. WESSENAUER. I think Mr. Wagner gave some of those figures earlier.

Mr. PHILLIPS. Did you give figures on that?

Mr. WAGNER. The acreage below the summer pool level is 464,000 acres. I think that is the figure which was given.

Mr. PHILLIPS. That is the figure which I was using, which is the total figure. Then, my figure is not sufficiently high for a total figure.

Mr. WAGNER. Are you speaking about all the land taken out of cultivation or use by the flood-control projects?

Mr. PHILLIPS. Yes.

Mr. WAGNER. That would be the amount below the full pool level, would it not? It seems to me it would be the figure which you gave.

Mr. PHILLIPS. I would like to have the total acreage which is inundated. You figure that out for me so I can get the information into the record.

(The information requested is as follows:)

The area of land flooded, exclusive of original riverbeds, by TVA reservoirs at full pool elevations now totals 483,356 acres, of which 467,268 acres is in reservoirs created by TVA-built dams.

Mr. PHILLIPS. Of the land permanently inundated, or otherwise taken out of production, what acreage was productive farmland, which includes the land subject to periodic overflows, but normally farmed?

(The information requested is as follows:)

Approximately 300,000 acres of what was farmland is flooded by reservoirs at full pool elevations.

Mr. PHILLIPS. What was the average annual crop value on the lands taken out of production by TVA action?

I think you have a study on that.

(The information requested is as follows:)

The value of agricultural production on the land flooded by TVA-built reservoirs at full pool elevations at the time of TVA purchase amounted to about $8 million annually. However, much more than land enters into agricultural production—the farmer also requires machinery, seed, fertilizer, livestock, management, and labor. None of these is lost by reason of construction of the reservoirs. The actual decline in farm income, therefore, amounts to no more than the rental value of the land (perhaps $1 million per annum) for which the owners were compensated in the purchase price.

Mr. PHILLIPS. What is the acreage of lands now held by TVA above the normal flood line of the TVA reservoirs? That more or less fits into the one which I was talking about earlier.

(The information requested is as follows:)

The area of reservoir lands owned in fee or governed by easements as of June 30, 1954, above full pool elevations was:

	Total	Multipurpose reservoirs	Single-purpose reservoirs
	Acres	*Acres*	*Acres*
Fee title	304,556	296,601	7,955
Easements	144,167	142,220	1,947
Total	448,723	438,821	9,902

TVA LAND ABOVE THE RESERVOIRS

Mr. PHILLIPS. What present use is made of TVA lands above the normal flood pool level? Can you give me the acreage by category of the use of it? Do you have a study on that?

Mr. WAGNER. I do not know that we have it in that detail.

Mr. PHILLIPS. See what you can do on it.

(The information requested is as follows:)

As of June 30, 1954, about 3,500 separate agreements for use of TVA lands were in force, covering uses compatible with the purposes for which the lands are held. Over 650 of the agreements cover some form of recreation use of reservoir shorelines by Federal, State and local agencies, and by private groups and individuals. Approximately 50,000 acres were licensed to some 1,800 farmers for agricultural use in fiscal year 1954. Sales of timber products in 1954 included 4,850,000 board feet of sawtimber, 1,595 cords of pulpwood, 206,382 linear feet of posts and poles, and 790 Christmas trees.

Mr. PHILLIPS. What is the annual administrative and other costs of handling these lands, and what revenue, if any, is received from them?

(The information requested is as follows:)

The total cost of administering these lands in 1954 was $588,129, including all direct and indirect expenses relating to this activity.

Revenues from lands rentals, licenses, timber sales, etc., totaled $247,347 in 1954.

BENEFITS FROM THE RESERVOIRS

Mr. PHILLIPS. What average annual dollar value of flood-control benefit to the Tennessee Valley is claimed by the TVA system and operations?

(The information requested is as follows:)

The estimated average benefits of the TVA flood-control system are more than $11 million per annum.

Mr. PHILLIPS. What Tennessee Valley area is supposed to be protected from floods, and what is the basis for estimating the benefits to it?

(The information requested is as follows:)

The TVA system provides protection for substantial areas in urban centers such as Chattanooga, Kingsport, and Elizabethton, all of which experienced severe floods prior to construction of TVA dams.

Along the river channels lying downstream from tributary multiple-purpose dams or systems of dams, damage from floods as high as the maximum presently known has been eliminated completely. This damage has been prevented on 58,000 acres, most of which is agricultural and grazing land; at bridges; at other communication facilities and drainage structures; and at communities. Along the bottomland in the upper reaches of main river reservoirs the depth and frequency of floods on 374,000 acres of land have been substantially reduced.

Reduction of flood heights on the lower Ohio and Mississippi Rivers made possible by the TVA flood-control system provide security from floods to 6 million acres of productive land and reduce the frequency of flooding on an additional 4 million acres.

The damage averted at Chattanooga ($53 million) and on the lower Ohio and Mississippi Rivers ($6,500,000) were computed from studies of damages averted but which would have occurred if flood heights had not been reduced by the TVA flood-control system.

The average annual benefits of the TVA flood-control system are based on damages which would have resulted in past floods without regulation by the TVA system. The extent of these damages is based on the rural and urban developments existing in 1948 taking into account data collected in detailed surveys of properties affected. The total estimated average benefits of $11 million per year also include an estimate of increased land values along the Mississippi River due to reductions of flood hazards by operation of the TVA system.

Mr. RABAUT. I would like for you to add to those questions the matter of the dollar value in regard to this area which is inundated, the value of facilities which it makes available to the Nation, as for example the item of the boats which was mentioned this afternoon in the amount of $10 million, and any other benefits which have come to the area, and, indirectly, the production of those facilities to the Nation.

I think that should be added to the questions which were asked by Mr. Phillips. I realize my request is quite difficult, but you perhaps may be able to touch on those subjects.

For instance, there must be some business created as a result of this operation.

Mr. WAGNER. We may be able to give you some examples, Mr. Chairman, but I do not know how complete an analysis we can make.

Mr. RABAUT. It will be very difficult, but it is not a one-sided picture, I would not think. There is $10 million worth of boats alone, and that is only for the inboard boats, where they have these attached motors.

Mr. PHILLIPS. Off the record.

(Discussion off the record.)

Mr. RABAUT. Another thing: This heater business should go into that, and the electrical appliances business should be attached to this. That is a big thing; not to mention the facilities which it became necessary to construct in order to build the TVA facilities, such as the large motors and generators, and transformers, and on top of that, the tremendous amount of labor which was furnished in the area, as well as the enhanced value of the land, and I could go on and on.

(The information requested is as follows:)

The value of recreation facilities and equipment on the TVA lakes is estimated at $47,800,000. Since 1947, when facilities and equipment were valued at $12,800,000, there has been an average yearly increase of over $5 million. Most of this investment is by private owners. Gross income to commercial recreation operations on lake frontage property totaled an estimated $5,900,000 in 1954, a 220 percent increase over 1947.

At the end of 1954, there were more than 31,200 recreation boats valued at more than $12,600,000 in use on TVA lakes. Most of the boats—inboards, outboards, and other craft—are manufactured outside the valley region, with a concentration in the Midwest especially Michigan and Wisconsin.

Reports from appliance distributors show more than $1.5 billion worth of electrical appliances were purchased by area residents in calendar years 1946 through 1954. Most of the appliances—electric ranges, water heaters, refrigerators, space heaters, smaller household equipment—were manufactured elsewhere, mainly in the Midwest and northeastern sections of the country.

Expansion of primary aluminum capacity and aluminum rolling and drawing capacity has brought an estimated investment in capital equipment of more than $90 million. Of this, more than 40 percent—$38 million—was purchased in the East North Central States—Ohio, Indiana, Illinois, Michigan, Wisconsin—and a third in the Middle Atlantic States—New York, Pennsylvania, and New Jersey. Six to seven percent was purchased in the New England and West North Central regions, respectively.

At Calvert City, Ky., investment in half a dozen plants is about $90 million. These plants required equipment manufactured in other sections of the country—refractory materials from the Ohio and upper Mississippi Basins, stainless steel from Pennsylvania, pipe, fittings, conveyors, loaders, motors, other electrical equipment, steam-producing equipment, and so on. Most of this is manufactured in the industrial sections of the North and East.

A single large plant which uses TVA power and water supplies from the Tennessee River and which spent more than $17 million for equipment made purchases of $13 million in New England, $4 million in the Midwest, and about $2.5 million in the Southern States.

Since 1946, nine new fertilizer plants have been or are being constructed in the Tennessee Valley. Much of their equipment—mixers, conveyors, loaders, bags, etc.—is purchased outside the Tennessee Valley, mostly in the North and East.

Since 1946, the municipal and cooperative electric systems which distribute TVA power have expended about $250 million for construction and operating materials and equipment, the bulk of it manufactured outside of the Tennessee Valley area.

FERTILIZER PROGRAM

Mr. RABAUT. At this time, we shall hear from Dr. Curtis, and he will introduce the subject which we are going to take up tomorrow, and give us a little explanation about the fertilizer program.

Then, I would ask permission of the committee for him to be able to extend his remarks in the record.

Dr. Curtis, we recognize you as an authority on the subject, and we will be very pleased to hear from you at this time.

Dr. CURTIS. Mr. Chairman, the operator of our chemical engineering facilities at Wilson Dam is here, and I would expect him to present the details of the budget. What I would like to do this afternoon is to take a few minutes to tell you about this fertilizer program in TVA.

What we are trying to do, and what we think we have done, is what I would like to tell you.

If you read the TVA Act, you will see right away that the fertilizer part of the act is obviously written with the idea of benefiting the farmers of the country, not of the valley, but of the whole country.

The TVA Board was authorized to use the two old nitrate plants down in Alabama, to enlarge those plants, to build new plants, and to carry on the experimental work in connection with fertilizers, and to manufacture fertilizers on any scale they might consider necessary to carry out the stated intentions in the act.

The products that were made could be given away or could be sold.

In other words, the Congress wanted the job for agriculture done, and they allowed the Board to have large discretion in how they did it.

The TVA Board looked at the provisions of the act, and they looked at the fertilizer industry. The fertilizer industry is a very large industry. At present, it makes about 23 million tons of fertilizer every year. At that time it was making several million tons.

The Board realized that if we were going to affect the price of fertilizer by operations of TVA, we would have to produce a very large quantity of fertilizer. The Board did not want to go into the manufacture of fertilizer on a large scale. So they sought other means of carrying out the intent and purpose of the act.

It seemed to the Board that, rather than going into large-scale manufacturing and trying to affect the price by direct competition, it would be far wiser and in the long run better, for the TVA to carry out experimental programs, develop new and better fertilizers, and to manufacture those fertilizers on a relatively small scale. This work was to be supplemented by launching an educational program among the farmers, so that they would use the new and better fertilizers.

At that time, or at the beginning of the TVA, our research laboratories had no time to develop new and improved fertilizers. So we decided to start our educational program with concentrated superphosphate. That is a material which was known to industry at that time. They had been making about 70,000 tons a year, but they had never been able to sell it to the farmers. They used it in their own internal operations in making their own mixtures, but they had not been able to sell it except in mixtures.

Why? Not because of the price. At the time TVA was organized, for example, it was possible for any group of farmers in the Knoxville area to buy a carload of concentrated superphosphate fertilizer from the old International outfit in middle Tennessee, and deliver that fertilizer at their farms at a cheaper price than they could buy the corresponding amount of a plant nutrient in low analysis material at a fertilizer plant in Knoxville. So, it was not the price. The trouble was, and the reason that the fertilizer industry had not been able to sell concentrated superphosphate, even though it was to the advantage of the farmers to buy it, was because the farmer at that time didn't know very much about fertilizer.

The farmers did not know as much as they do today. The farmers at that time bought the fertilizer pretty largely based upon the size of the bag, and how badly it smelled, and the fertilizer industry, naturally, set out to give the farmer what he wanted.

In order to make the bag big they rounded up peanut shells and anything else handy and made the bag big. They would put something in it to make it smell bad and make the bag large. This rubbish put in fertilizer at that time cost the farmers millions of dollars.

The TVA thought its first job would be to educate the farmers to use concentrated superphosphate which they should be using to their own advantage.

DEFENSE VALUE OF FERTILIZER PLANT

We went into the manufacture of concentrated superphosphate in a small way. We built two small electric furnaces. We didn't use the process industry was using because we wanted to restore the defense value of those nitrate plants down there.

When we go by the electric furnace route we manufacture elemental phosphorous, and that is ammunition of war.

It is a fortunate decision that was made to use the electric furnace method because from that day to this the Army has fallen back on us whenever they want phosphorous.

Ordinarily the Army asks industry to bid. If industry happens to have plenty of phosphorous they will bid. If they don't have it they don't bid, and the Army comes to us.

During World War II we had to supply 60 percent of the Army's phorphorous. We have been criticized for doing that but we supplied it because industry didn't want to. It was proper for us to supply the Army with the phosphorous they needed.

When phosphorous was scarce and on allocation we had to agree to supply 50 percent of the Army's demands.

During the Korean war industry again didn't want the business, so for nearly a year we had to supply 100 percent of it, and from that day to this, whenever the Army can't buy phosphorous on the open market, they come to TVA and we supply it.

FERTILIZER EDUCATIONAL PROGRAM

In order to get the educational program launched, the agricultural people of TVA devised what we call the test demonstration farm. Some of you have seen those farms.

I believe it was one of the best educational programs for that purpose that ever has been developed.

In the course of time, over the years, the farmers began to demand concentrated superphosphate. I went personally to the fertilizer people manufacturing fertilizers and urged them to get ready to meet this demand because TVA did not want to enlarge its operations.

In the course of time industry built factories to meet this demand and today, instead of 70,000 tons, they are producing about 1 million tons of concentrated superphosphate in plants located over the country, and TVA's job in that line is done and we are getting out of the way and letting industry take over.

That pattern of developing these fertilizers, educating the farmers to use them, and developing the demand and then getting out of the way and letting industry come in has been followed ever since TVA was set up.

Well, within a short time our laboratories came through with new and better fertilizers. We carried them through. The pilot-plant stage was over and in some cases we got into small-scale manufacturing and our agricultural people introduced that to industry to fill the demand.

During World War II we built an ammonia plant for the Army, one of about a dozen plants the Army built. It became evident that TVA would have a great deal of ammonium nitrate which when the military need no longer existed, would for the first time be available to agriculture in large quantities. So the TVA set out to find out how to condition that material for use in agriculture. Then we put it into our demonstration program and got the farmers familiar with it and helped to create the market for ammonium nitrate. Today ammonium nitrate is the chief nitrogen fertilizer used in the country.

That has been the general program we have followed down there. It has been to develop these new fertilizers, test them out in the experiment stations, get them out into the hands of the farmers, create a market, and then get out of the way as soon as industry takes over.

Our most recent effort in that line is diammonium phosphate. We plan in the next few years to put that material through the same sort of a program as we followed with the other materials. As soon as industry takes hold we are then through that job.

That, I believe, Mr. Chairman is all I have to say.

Mr. Wagner suggests that I should add that everything, all the information we develop at the Shoals, is made available to industry. We have every month dozens of visitors from industry, they are there nearly all the time. We give them all the information we have, our technical reports, give them our drawings. We have about 100 patents. They can have those patents without charge.

So we think we are a very good friend of the fertilizer industry though they don't always agree with us.

Mr. RABAUT. We appreciate your statement.

I was glad to have your statement tonight because it gives us an opportunity to go into the budget items tomorrow.

I want to say we will try to wind up on this so we can get into atomic energy tomorrow afternoon.

The committee will now adjourn until tomorrow at 10 o'clock.

WEDNESDAY, MAY 25, 1955.

FERTILIZER AND MUNITIONS DEVELOPMENT PROGRAM

Mr. RABAUT. The committee will come to order.

This morning we will take up the fertilizer and munitions development program of the TVA.

First insert page 58 in the record.

(The page referred to is as follows:)

SCHEDULE B–3.—*Fertilizer and munitions development (for fiscal years ending June 30, 1954, 1955, and 1956)*

	1954 actual	1955 estimate	1956 estimate
Income:			
Sales of fertilizer:			
Federal agencies	$323,671	$935,000	$935,000
Cooperatives and other distributors	19,435,450	21,016,000	19,431,000
Total sales of fertilizer	19,759,121	21,951,000	20,366,000
Sales of byproducts and recovery of other production and distribution expense	552,916	490,000	510,000
Total income from fertilizer production and distribution	20,312,037	22,441,000	20,876,000
Income from partial payment plan	146,543	197,000	216,000
Other income	5,865	10,000	10,000
Total income	20,464,445	22,648,000	21,102,000
Expenses:			
Research on products and processes (appropriated funds)	1,253,750	1,286,000	1,238,000
Basic agronomic research (appropriated funds)	223,488	268,000	299,000
Production and distribution (corporate funds):			
Cost of products including depreciation	17,150,618	18,082,000	15,834,000
Other expenses	572,120	1,315,000	636,000
Gross cost of production and distribution	17,722,738	19,397,000	16,470,000
Less products transferred:			
Transferred to farm test-demonstrations below	428,521	590,000	481,000
Transferred to other TVA programs	56,233	33,000	43,000
Less depreciation included above	1,133,618	1,540,000	894,000
Total direct cost of production and distribution	16,104,366	17,234,000	15,052,000
Farm test-demonstrations:			
Planning and supervision (appropriated funds)	384,593	419,000	348,000
Fertilizer used:			
Appropriated funds	281,978	393,000	265,000
Corporate funds	146,543	197,000	216,000
Total farm test-demonstrations	813,114	1,009,000	829,000
Total direct expense:			
Appropriated funds	2,143,809	2,366,000	2,150,000
Corporate funds	16,250,909	17,431,000	15,298,000
Total	18,394,718	19,797,000	17,448,000
Distribution of administrative and general expenses (schedule B–5)	392,437	443,000	465,000
Total expenses before depreciation	18,787,155	20,240,000	17,883,000
Depreciation on chemical facilities	1,185,150	1,592,000	946,000
Total expenses	19,972,305	21,832,000	18,829,000
Net income from fertilizer and munitions development	492,140	816,000	2,273,000

RESEARCH ON FERTILIZER PRODUCTS AND PROCESSES ($1,238,000)

The three usual steps in the technological development of new fertilizers are (1) small-scale or laboratory research; (2) process development or pilot-plant experimentation; and (3) demonstration-scale plant operation. The first two steps are described below, while the third step is budgeted under "Fertilizer production and distribution."

TVA actively encourages industry to make use of promising research results. Its laboratories and plants are visited frequently by representatives of fertilizer and allied companies who observe the work being done and study technical data obtained by TVA. Firms wanting to adopt patented TVA processes may obtain royalty-free, nonexclusive licenses. About 60 licenses have already been issued to use TVA processes or to manufacture TVA-developed equipment. Other firms have requested licenses. Information on TVA research results is also made available through publications, technical journals, TVA reports, answers to letters of inquiry, and the lending of designs and other technical data.

Cooperative working relationships with the United States Department of Agriculture and the National Fertilizer Association provide for exchange of information and coordination of research. Research of interest to the AEC is coordinated with that agency.

SMALL-SCALE RESEARCH

Small-scale research includes (1) observation, collection, and organization of facts to provide a foundation for subsequent research; (2) exploratory tests of proposed processes and techniques to determine whether the proposals warrant further research; and (3) applied research to devise new or improved products, processes, or techniques.

Studies of the fundamental properties of calcium phosphates and associated compounds are yielding valuable background information for development of new and improved fertilizer processes. These long-range studies will be continued. Work will be continued on long-term studies of the chemical behavior of phosphate fertilizer in the soil. The chemical changes that take place in the soil bear critically upon the efficiency of the movement of phosphate from fertilizer to plant tissue. Basic information from this laboratory work should aid the development of more effective fertilizers. Research on recovery in commercially useful forms of byproduct fluorine from the processing of phosphate will be continued.

Exploratory research on combination fertilizers will be continued at about the 1955 level. A study of the reactions between phosphoric oxide and ammonia will be continued with the object of obtaining products that are more stable in storage and are more effective fertilizers than present products.

PROCESS DEVELOPMENT

Process development consists of (1) technical and economic evaluation of small-scale research results; (2) development of the unit operations necessary to define a process and obtain data for a pilot plant; (3) design, construction, and operation of pilot plants; (4) improvement of design features and operating procedures of demonstration-scale plants; and (5) engineering and economic studies directed toward adoption of processes by private industry.

In cooperation with AEC, TVA is conducting pilot-plant studies of a process for using a Florida high-alumina phosphate ore now discarded to recover P_2O_5 in a form suitable for fertilizer use and to recover uranium. Small-scale research was begun in 1952. Data from pilot-plant studies will permit a more reliable economic evaluation of the process and will be available for design of plant-scale units, subject to any security restrictions that AEC may deem necessary. AEC has stated that the development holds promise of attaining major importance in its uranium procurement program.

Increased emphasis will be given to the recovery of nitrogen from nitric acid plant tail gases. Work on the recovery of sulfuric acid from byproduct calcium sulfate and on the production of dicalcium phosphate from rock phosphate and phosphoric acid will continue.

Studies of methods for using calcium metaphosphate in fertilizer mixtures which were started in 1955 will be continued. Investigations will be carried out for the improvement of manufacturing processes employed in fertilizer mixing plants. The National Fertilizer Association is interested in these latter investigations and will be kept informed of progress made.

Work will be continued on the development of a process for production of potassium-calcium phosphate fertilizer—a potential effective source of slowly soluble potash and phosphorous pentoxide. An investigation of the production of an ammonium phosphate-nitrate fertilizer will be continued. This is a promising product. It is about the highest analysis nitrogen-phosphorus combination that can be obtained economically by present technology. The phosphate in this combination being water soluble will likely make it more effective than less soluble forms in present mixtures.

Work will continue on development of processes and methods for using high proportions of nitrogen solutions, including ammonium nitrate solutions, for the production of high-analysis fertilizers of improved physical properties. The work is being done cooperatively with USDA, small-scale work being done by USDA and pilot-plant studies by TVA. This project is of special interest to the National Fertilizer Association. A panel of technical advisers formed by NFA meets with the TVA technical staff to discuss the work at appropriate intervals.

Mr. RABAUT. How is this program financed? What part is appropriated funds and what part is corporate funds?

Mr. WAGNER. The program is financed partly by the revenues from the fertilizer and chemical materials that we sell and partly from appropriated funds. The direct expense of the program is financed

$15,268,000 from corporate funds and $2,150,000 from appropriated funds.

Mr. RABAUT. What revenues do you receive?

Mr. WAGNER. The total income from plant operation is $21,102,000.

Mr. RABAUT. It looks as though this is a moneymaking activity.

Mr. WAGNER. As Dr. Curtis said yesterday, this is basically a research and educational program. It is true, however, that at the present time the revenues from the sale of materials are sufficient to cover all operating costs, including depreciation on the plant, the cost of our research and the cost of our demonstration work, and still leave an amount in addition to that available for return to the Treasury.

FERTILIZER RESEARCH

Mr. RABAUT. If you will turn to page 60, we will take up research and fertilizer products and processes.

You have an amount there of $1,238,000. What results have come from this program and what new sources are you working on?

Mr. WAGNER. Mr. Young, Mr. Chairman, who is our manager of chemical engineering, is here. I would like to ask him to respond to that.

Mr. RABAUT. We will be pleased to hear from Mr. Young at this time.

How long have you been with the Agency, Mr. Young?

Mr. YOUNG. Since 1933.

Mr. RABAUT. You are manager of the chemical engineering plant?

Mr. YOUNG. Yes.

There are three steps, Mr. Chairman, that are taken in our work at the fertilizer plant with respect to the research work. The first step is out small-scale research work which we do in the laboratories, where new ideas are tried out. Those which show promise are passed on to our process development group. They explore the possibilities of the process, determine whether or not it is a feasible new process.

The first two steps I just mentioned are the steps covered under the appropriation heading about which we are now talking.

The third step is the demonstration scale plant operations. The work which we do in the laboratories and the work which we do in our pilot plant, and our large-scale work are all made available to the public, which includes information on our processes.

The small-scale research work involves studies of fundamental chemistry in the laboratory while the Process Development Division carries on the larger scale pilot-plant work.

This research work has been carried on now for 20 years in the development of new fertilizer processes, starting in with the work on our electric-furnace process.

At the present time we are working on some interesting projects in our research and development laboratories. One of the principal projects is in connection with the recovery of leached-zone material from the Florida phosphate fields. The Florida phosphate reserves contain large deposits of leached-zone phosphate which overlies the phosphate that is normally used. In fact it is estimated there are something like 15 million tons of this material wasted each year.

The Atomic Energy Commission is interested in this material because it contains uranium. We are interested in it because it

offers a possibility of conservation of an irreplaceable raw material which is now going to waste.

The concentration of uranium in the material is rather low, so that it cannot be mined for that purpose alone, and the real problem was to determine if a process could be developed which would convert the phosphate into an economical fertilizer and at the same time permit the recovery of the uranium.

We have been working on such a process and have done some pilot-plant work which has turned out quite successfully.

However, the type of phosphate in this leached-zone material is different from that used in the normal production of phosphate fertilizer used today. It is an aluminum phosphate rather than a calcium phosphate, so that a large amount of work remains to be done in determining the agronomic response and quality of the material as a fertilizer.

Mr. RABAUT. That is one of your new processes?

Mr. YOUNG. Yes; it is.

Mr. RABAUT. Have you any others?

Mr. YOUNG. Yes. We are working on a process to produce an ammonium phosphate nitrate fertilizer by the reaction of phosphoric acid, nitric acid, and ammonia to form high-analysis fertilizer. That is also in the development stage.

We are working in a cooperative program with the United States Department of Agriculture in the improvement of the quality of high-analysis fertilizers. One of the problems in producing high-analysis fertilizers is the physical condition of the product, and in this cooperative program we are working on that problem.

We have another project under study known as fused potassium phosphate fertilizer. This is a high-analysis fertilizer which shows promising results. It has some advantages over other fertilizers containing potash because the potash becomes slowly available to the plants and therefore it should be available to them over a longer period of time.

Another study we are making is on calcium metaphosphate. We developed a calcium metaphosphate from the pilot-plant stage and we are now producing this product in one of our large-scale units.

Calcium metaphosphate is the highest grade phosphate fertilizer produced today and it has many advantages. However, it has some disadvantages and we are studying methods in the laboratory to determine how to make wider application of this fertilizer.

There are many other processes being worked on in the laboratories.

Mr. RABAUT. Have you something of a somewhat secretive nature?

Mr. YOUNG. Not in our phosphate work. We have done some secret work for the Chemical Corps of the Army.

Mr. RABAUT. I imagine most of these funds requested here are for these pilot-plant projects?

Mr. YOUNG. They are for the small-scale work in the laboratories and pilot plant.

Mr. RABAUT. I mean the returns.

Mr. YOUNG. Revenues come from the larger scale operations.

Mr. RABAUT. What do you call those?

Mr. YOUNG. Demonstration scale operation in which we produce fertilizer products.

Mr. RABAUT. That was referred to yesterday by Dr. Curtis?

Mr. YOUNG. Yes, sir.

Mr. RABAUT. Anything further you want to say about this?

Mr. YOUNG. No; except this is really the source of our basic work in fertilizers, the long-range planning which we are doing here in order to come out with better fertilizers for the farmer.

Mr. RABAUT. And you make it known to other companies eventually when you feel it is right?

Mr. YOUNG. I think we have done more than that. We write technical papers on our work as it progresses, we invite the members from industry to come and visit our plant, we answer correspondence by mail, and as Dr. Curtis mentioned yesterday TVA has over 100 patents of which 80 refer to developments in this program.

Mr. RABAUT. In other words, this is really an activity which is of benefit to the Nation?

Mr. YOUNG. Yes, sir; of great benefit to the Nation, as is illustrated by the fact that beginning in 1933, and through these continuous research efforts we have made a major contribution to the advances made in fertilizer technology.

Mr. RABAUT. Did you want to say anything further?

Mr. WAGNER. Two points, Mr. Chairman.

COOPERATION WITH INDUSTRY

During the last fiscal year Mr. Young has had at the Muscle Shoals plant about a thousand visitors, representatives of the fertilizer industry and people with technical interest in the fertilizer processes, down there to inspect the work and to get information which they then can take back and apply in their own operations.

In addition to this about 1,000 requests came to the plant by mail from 37 of the 48 States and from 24 foreign countries.

Another point that I would like just to mention briefly is this:

He indicated we have given special attention to high analysis fertilizers. The importance of that approach is illustrated this way, I think:

The average concentration of fertilizers used today is about 25 percent plant food. The balance is filler, which is of little use to the crops. But when a farmer has to buy a ton of fertilizer he pays freight on three-quarters of a ton of filler.

By using higher analysis fertilizers he reduces his freight bill.

The Southwest Virginia Cooperative, which distributes fertilizer, some of ours and a greater proportion of commercially produced and purchased fertilizers, recently reported to us that they had been able to get the concentration of the fertilizers which they sell up to 35 percent plant food as compared with a State average of 23.8 percent.

Because the farmers to whom they sold fertilizer bought this more concentrated material, in that 1 year they saved $186,000.

I think that illustrates the value to the American farmers.

Mr. YOUNG. I also would like to mention the fact that the National Fertilizer Associations regularly send their technical representatives to the Shoals, review our work, and inform us of their production problems. In that way we try to cooperate with them and assist them in working out some of their problems.

Mr. RABAUT. Off the record.

(Discussion held off the record.)

Mr. RABAUT. Are there any fertilizers today on the market which are the direct result of your work in your laboratories?

Mr. YOUNG. Yes, sir; there is one fertilizer known as nitric phosphate which is now produced commercially by a company in Sheffield, Ala. We supplied information to a second company which is also producing that material.

Mr. RABAUT. And there are other companies which are studying some new developments that you have?

Mr. YOUNG. That is right. I believe our work has been responsible for progress in the phosphate industry as a whole, and as a direct result of our work several plants have been constructed by the phosphorus industry.

Mr. RABAUT. All right.

BASIC AGRONOMIC RESEARCH

Insert page 63, and tell us about the basic agronomic research, $299,000. What are your plans for this program?

(The justification is as follows:)

A STATEMENT ON BASIC AGRONOMIC RESEARCH

TVA cooperates with State experiment stations in the conduct of laboratory, greenhouse, and field plot tests to determine under-controlled conditions the relative efficiency of TVA fertilizers on major crops and soil types. This basic agronomic research is a necessary step in evaluating the relative merits of new fertilizers prior to their introduction to farmers through test-demonstrations or educational sales programs. It is helpful also in identifying problems on which additional process research is necessary. The work is coordinated with activities of USDA through informal arrangements. Tests are being carried on at the seven valley State experiment stations and at experiment stations in four other States, each representative of a major soil region.

The 1956 estimate for basic agronomic research is $299,000. Research objectives will be to obtain information on new types of fertilizer and on characteristics desired in fertilizer; to evaluate new TVA fertilizer materials as to availability of plant food to plants, reactions with soil, and use practices to which each is best adapted; to find fertilizer-use practices that will increase the efficiency of nutrient utilization by crops and that will increase the economic returns from fertilizer applied. During fiscal years 1955 and 1956 TVA expects to improve greenhouse tests by providing better laboratory facilities and by augmenting the staff engaged in this research.

In 1955 and 1956 special attention will be given to the economic interpretation of agronomic research. The economic interpretation of agronomic research will make agronomic experimental data more useful as a basis for fertilizer recommendations to farmers. The studies should also aid in improving the designs of field fertilizer experiments.

Mr. WAGNER. Mr. Chairman, I will answer that for you.

Mr. RABAUT. All right, Mr. Wagner.

Mr. WAGNER. These fertilizers which Mr. Young has talked about, after they have been developed in the laboratory and in the pilot plant, and as they are developed, need to be tested on crops to see if you get proper crop response and the kinds of results you get.

Some of those tests are made in the greenhouse, some are made in filed plots at the experiment stations, of the State agricultural colleges both in the valley and in four other States which are representative of typical soil types in the Nation, and the purpose of these tests is

to find out whether the fertilizers really work and how well they work, whether changes need to be made in the process that will improve them—that is in the production process.

$299,000 for basic agronomic research is for testing of that kind. We plan——

Mr. RABAUT. Do you get a similar amount every year? How much did you have last year in this?

Mr. WAGNER. There is an increase proposed for 1956 of $31,000. That increase is largely in order to accommodate some increased work in greenhouse tests in a greenhouse we are building at Muscle Shoals to operate in conjunction with the chemical plant.

Mr. RABAUT. Is this work a continuous enlargement process or is this a new feature you are trying now? Or was this done by others before and you want to be closer to the operation?

Mr. WAGNER. This particular work is an enlargement this year, and I presume that the enlargement made this year does not forecast a continued growth in the expenditure, Mr. Chairman.

The point is that a fertilizer operation of this nature ought to have greenhouse facilities for testing the fertilizers, to permit closer liaison and closer cooperation between the agronomists on one hand and chemical research engineers on the other hand.

If our fertilizer plant is to keep producing improved fertilizers this kind of research is essential.

Mr. RABAUT. I presume the greenhouse business is growing considerably in the country, also?

Mr. WAGNER. I presume it is, sir.

Mr. RABAUT. Because of refrigerated trucks, and so on.

FERTILIZER PRODUCTION AND DISTRIBUTION

We will turn now to page 64, getting down to the money in the program, fertilizer production and distribution, you show $15,052,000.

We will insert pages 64 to 70 inclusive in the record.

(The pages referred to are as follows:)

FERTILIZER PRODUCTION AND DISTRIBUTION ($15,052,000)

TVA builds and operates demonstration-scale manufacturing units (1) to demonstrate the technical and commercial feasibility of a new or improved fertilizer process and to encourage its adoption by industry; (2) to supply fertilizers for test-demonstrations on practical farms; (3) to produce new fertilizers in quantities sufficient for widespread introduction to farmers; (4) to produce fertilizers needed to aid the achievement of improved systems of fertilization; and (5) to supply munitions material for national defense. Estimated direct obligations for fertilizer production and distribution are $15,052,000 for 1956, compared to the 1955 estimate of $17,234,000. Income is estimated at $20,876,000 for 1956, compared to $22,441,000 for 1955.

Fertilizer produced by TVA in excess of amounts required for farm test demonstrations and other TVA programs is sold to farmers through cooperative and industry distributors. These distributors must agree to sell the fertilizers only through educational programs for specified new and improved uses. The objectives of this selected-use program are to obtain farmer acceptance of improved fertilizer practices, to aid in lowering the cost of plant nutrients to farmers, and to expand the demand for fertilizer by increasing the farmers' knowledge of the more efficient new uses. In each State the new and improved uses are selected by representatives from the land-grant colleges, the USDA, and the TVA distrib-

utors subject to final review and approval by TVA. The TVA fertilizers are made available in sufficient quantity to demonstrate the recommended fertilization practices or systems. When a particular practice becomes widely adopted within a State, it is dropped from the list of approved uses. Selected-use programs have been established in 35 States. Through reports submitted by the distributors and staff contacts with the distributors, TVA obtains useful information on distribution costs, the results of educational activities, farmer acceptance of new products, and farmer preferences as to kinds or conditions of materials.

As stated above, one objective of the fertilizer sales program is the stimulation of demand for economical high-analysis materials which will be supplied from sources other than TVA production. For example, TVA's experimental production and demonstration of concentrated superphosphate helped to create a demand which has resulted in steady industry expansion. In 1935, when TVA began production of concentrated superphosphate there were only five small producers in the Nation. Now there are 17. TVA has been reducing its output of this material in recent years and will cut production drastically in 1956, looking to early termination of manufacture of concentrated superphosphate.

Use of ammonium nitrate as a fertilizer was almost unknown to United States farmers in 1942. In 1943 the Army released TVA's nitrogen facilities from defense uses and TVA began the production and distribution of ammonium nitrate fertilizer. The number of producers increased from 3 in 1943 to 7 in 1954, with other plants under construction or planned.

The 1956 estimates of production, distribution, costs, and prices of the 4 fertilizers to be produced on a demonstration scale are summarized on the following page. Production and distribution figures show tons of material. Costs are for material in 100-pound bags and include provision for depreciation. Prices are the rates per ton of bagged material, f. o. b. plant, to first-handling distributors.

This table shows the 1956 estimates of production and distribution—by tons of material, unit costs, and prices—of the 4 fertilizers to be produced in demonstration scale plants

	Concentrated superphosphate	Calcium metaphosphate	Ammonium nitrate fertilizer	Diammonium phosphate fertilizer
Production, tons	17,000	72,000	165,000	43,000
Plant food content, percent	48	61	33.5	65–74
Distribution, total tons	20,000	72,000	165,000	43,000
Sales to Federal agencies, tons	100		1,500	
Sales to distributors, tons	19,750	64,309	155,300	41,990
Sales to test-demonstration farmers, tons		1,000	8,000	
Used in farm test-demonstrations, tons	75	6,216	46	1,000
Used in other TVA programs, tons	75	475	154	10
Base price, per ton, material	$49.44	$61.61	$60.14	$91.50
Cost of production, per ton, material	50.88	65.58	32.00	74.90
Cost of production, per ton, plant food	106.00	107.50	95.52	115.23

The fertilizer estimates above reflect plans to sell part of the chemical plant output in the form of intermediate products. Phosphorus will be sold to other Federal agencies for defense use. Nitric acid will be sold to Associated Cooperatives, Inc., Sheffield, Ala., to be used in producing nitric phosphate fertilizer by a process developed by TVA. TVA has agreed to supply this intermediate material until such time as Associated Cooperatives, Inc., can establish an independent source of supply, but not longer than 3 years. Associated Cooperatives, Inc., will supply TVA with technical and economic information on plant-scale operation of the nitric phosphate process and will permit TVA to disseminate this information in the same manner as for its own facilities and processes.

CONCENTRATED SUPERPHOSPHATE

Production of concentrated superphosphate has been reduced as other demands for the intermediate phosphorus increase. The 1956 estimate of 17,000 tons is about 93,000 tons less than 1954 shipments. Practically all of the amount available in 1956 will be used in the selected-use sales program.

The objectives of process development and widespread introduction of concentrated superphosphate have been largely attained. In addition to providing needed fertilizer for improving fertilization practices, continued production of a balancing quantity of this material stabilizes the chemical plant operations and permits flexibility in supplying phosphorus for defense purposes.

CALCIUM METAPHOSPHATE

Calcium metaphosphate, a product developed by TVA, is the most concentrated phosphate fertilizer on the market and because of its concentration can be bagged, shipped, and handled at a lower cost per ton of P_2O_5 than any other phosphate fertilizer. It is particularly suitable for use in the rapidly growing middle western fertilizer market area.

The product is manufactured in a furnace using a lining of self-deposited metaphosphate to replace most of the expensive refractory lining of the combustion chamber. Improvements in furnace operation will make possible an increase in production to about 65,000 tons in 1955. Further furnace improvements now underway will permit a production increase to 72,000 tons in 1956 at greater economy. This increase in capacity of a single unit should make the process more attractive to industry and will provide additional material for introduction of the material to farmers.

From an agronomic standpoint, calcium metaphosphate is effective on acid and neutral soils. More data are needed on its suitability for use with a variety of crops and for its effectiveness on alkaline soils. This material will continue to be used in agronomic tests, farm test-demonstrations, and the selected-use program.

FUSED TRICALCIUM PHOSPHATE

Fused tricalcium phosphate is made by fusion of raw rock phosphate and does not require the use of sulfuric acid, elemental phosphorus, or large quantities of electric power. It contains about 50 percent more total plant food than ordinary superphosphate, which is the phosphate fertilizer most widely used in the United States. TVA's technical development work on the fusion process was substantially completed and the plant was closed on June 5, 1954. Distribution of the product in inventory will be completed during fiscal year 1955. The plant is being offered for sale. All the technical information developed by TVA is available to industry.

Continued operation of the plant by private industry would be a contribution to the fertilizer resources of the country. The material has several advantages. No high-grade phosphate rock and no acid is used in its manufacture. It does not absorb moisture and can be stored and shipped in the open. However, it is not suited for use in commercial mixtures and is not satisfactory for alkaline soils.

AMMONIUM NITRATE FERTILIZER

Earlier research and development by TVA, partly in cooperation with USDA, led to the promotion of the use of ammonium nitrate for fertilizer when the military demand for the material was satisfied during World War II. This material is now in demand in solid form for agricultural production. TVA now produces ammonium nitrate fertilizer in a plant-scale demonstration unit of the continuous vacuum crystallization process. The adoption of this safer and more economical process is the result of research and development work by TVA.

The estimated 1956 production of 165,000 tons is about 16,000 tons below the 1955 level and reflects plans for shipments of intermediate materials to Associated Cooperatives, Inc., for use in producing nitric phosphate; diversion of some ammonia to the production of diammonium phosphate; and utilization of some of the ammonium nitrate crystallization facilities in its manufacture. Most of the 1956 production will be distributed through the selected-use sales program. As new processes or process improvements for making fertilizers requiring nitrogen

are developed by TVA, intermediate materials now used in ammonium nitrate fertilizer production will be available for use in the new process.

DIAMMONIUM PHOSPHATE FERTILIZER

In 1955 TVA will modify some existing chemical facilities for the production of diammonium phosphate fertilizer and will divert ammonia and phosphoric acid from production of ammonium nitrate and concentrated superphosphate to use in its manufacture. During 1956, a total of 43,000 tons of the material will be produced.

Diammonium phosphate is a highly concentrated nitrogen-phosphate fertilizer which is homogeneous and water soluble. Two grades will be produced initially, one containing 21 percent nitrogen and 53 percent P_2O_5. It will be distributed in bulk. The other grade, to be bagged for shipment, will contain 18 percent nitrogen and 47 percent P_2O_5.

Little diammonium phosphate is marketed in this country for direct use as a fertilizer. It appears particularly suited for distribution in areas where a fertilizer of high water solubility is needed and no potash is required. If production costs are favorable and if a successful introduction program can be conducted among farmers, industry may be encouraged to undertake greater production of diammonium phosphate.

Farm Test-Demonstrations ($829,000)

This table shows appropriated fund requirements for farm test demonstrations for fiscal years 1955 and 1956

	1955	1956
Fertilizer	$590,000	$481,000
Less farmer payments for fertilizer (corporate funds)	197,000	216,000
Net cost of fertilizer	393,000	265,000
Contractual payments	253,000	192,000
Other costs	166,000	156,000
Net expense (appropriated funds)	812,000	613,000

TVA, the land-grant colleges, and farm families have worked together since 1935 in a cooperative test-demonstration program, the major objectives of which are (1) introduction to farmers of TVA's experimental fertilizers and testing and demonstration of their use in various farming systems; and (2) development of improved fertilization systems and demonstration of their feasibility under practical farm conditions. Another objective related specifically to the valley is agricultural development through improved use of fertilizers and other resources available to farmers in the operation of their farms. Experience on test-demonstration farms is being used to help identify important agricultural problems facing valley farmers and suggesting ways of meeting these problems.

Test-demonstration farmers are selected to provide wide representation of major soils, farm size, types of farming, financial positions of farmers, and major agricultural problems. The program is currently being conducted in 21 States and on about 2,390 farms. For fiscal year 1956 the number of farms will be lowered to about 1,800. In general, farmers participate for a period of 5 to 7 years. However, not more than 500 valley farms may remain in the program for longer periods. The purpose of this group of farms is to demonstrate the long-time effects of improved fertilization in combination with other good farming practices and to study typical problems facing the development of such farms over long periods and through varying economic conditions.

TVA experimental fertilizers are furnished to test-demonstration farmers under a partial payment plan. During the current year the farmer pays about 30 percent of the TVA f. o. b. wholesale price for fertilizer. In 1956 this will be increased to 45 percent. A group of farmers participating in a special project receive fertilizer at no cost, f. o. b. the plant. The farmers also pay freight and handling costs on all test-demonstration fertilizers. Additional capital and operating expenses paid ty the farmer in order to carry on a sound test-demonstra-

tion program are often substantial. In 1956 an estimate 6,216 tons of calcium metaphosphate, 46 tons of ammonium nitrate, 75 tons of concentrated superphosphate, and 1,000 tons of diammonium phosphate will be used. Six hundred tons of nitric phosphate fertilizer will be purchased vy TVA for destribution at the purchase price for test and demonstration. Test-demonstration farms will play an important role during 1956 in introducing the latter two fertilizers:

Supervision and technical guidance in planning and conducting the program, including such matters as selecting and planning farms, is provided through the agricultural extension services of the State land-grant colleges, with part of the cost being financed by TVA. The colleges and TVA jointly provide overall discretion of the program and conduct special econonic analyses of results.

In addition to the regular collection and analyses of data from test-demonstration farms, TVA and the colleges are making special case studies of a limited number of test-demonstration farms in each valley State. Present income and farm organization will be compared with potential income and farm organization under alternative plans. Results of these studies will be useful in appraising program effectiveness, in farm planning for test-demonstrations, and in suggesting adjustments in other agricultural activities of the participating agencies.

In the past several years TVA expenditures for test-demonstrations have decreased sharply. In 1946 test-demonstration fertilizer was supplied to farmers at no charge f. o. b. TVA plant, and TVA costs for this fertilizer were about $2 million. For 1956 the gross fertilizer cost is estimated at $481,000 and the net cost to TVA at $265,000. In 1946 TVA payments to the valley land-grant colleges for test-demonstration supervision totaled about $545,000, while State contributions were about $425,000. Comparable estimates for 1956 are about $192,000 from TVA payments and about $750,000 from the States.

Mr. RABAUT. What plants will TVA operate in 1956?

Mr. YOUNG. I assume you refer to our demonstration of large-scale operations?

Mr. RABAUT. Yes.

Mr. YOUNG. In 1956 we will produce ammonium nitrate, some concentrated superphosphate, calcium metaphosphate, and diammonium phosphate.

Mr. RABAUT. Do you want to make known if these are separate plants and what the production capacities of the plants would be?

Mr. YOUNG. They are all part of the same plant, different sections of the same facility.

Mr. RABAUT. Will you give us an idea of the production in the various categories of items?

Mr. YOUNG. Concentrated superphosphate, shipments in 1956 are estimated at 17,000 tons.

Mr. RABAUT. That is set forth in this table which is included in the record?

Mr. YOUNG. Yes.

Mr. RABAUT. All right. We will not need to repeat it then.

On page 65, TVA has been reducing its output of this material in recent years and will cut production drastically in 1956, looking to early termination of the manufacture of concentrated superphosphate. Please give the reason for this.

Mr. YOUNG. Our program on concentrated superphosphate started back in about 1934. At that time there was very little high-analysis fertilizer produced. Our production of concentrated superphosphate resulted from our development of the electric-furnace process.

This material has been tried by the farmers of this Nation and the results have encouraged its production by private industry so where in 1934 the total production was approximately 70,000 tons, today there are about 1 million tons a year produced. TVA feels that its objectives in this program of getting concentrated superphosphate accepted and introduced to the farmers is nearing comple-

tion, and therefore we are gradually decreasing the output of that product.

It is a typical case of what we believe is our objective and purpose in this fertilizer development work, to make a new fertilizer product, test it, get the farmers to become familiar with it, and learn how to use it, and thereby create a demand for this product which industry will supply.

In the case of superphosphate we believe this has been largely accomplished and we are therefore decreasing our production, and we hope to divert our raw material to some other new product.

Mr. RABAUT. I take from that statement of yours, then, that you in no manner compete with industry in this fertilizer field? What you do is really to assist industry or show them the way, and then you leave it to business to run the fertilizer business?

Mr. YOUNG. This program is an experimental program. Our objectives are to develop fertilizers, introduce them, get them accepted. After that has been done we drop off and follow a new fertilizer through, so we have no reason to compete with industry. We are not in competition with industry. We try to promote the interest of the American farmer in getting him more concentrated and cheaper fertilizer and at the same time pave the way toward conserving the soils of this Nation.

Mr. WAGNER. With your permission I would like to show you a map. This map shows the area in which TVA fertilizers are distributed.

The cross-hatched area on the map indicates the area in which the fertilizer is distributed in our educational sales program. The darker shaded areas indicate areas where we have test demonstration farms.

I show you the map because it indicates that the fertilizers are distributed widely over the United States. TVA's production as part of the total production of fertilizers in the United States is relatively small.

In 1953 we produced, I believe, 1.7 percent of the tons of fertilizer that were consumed in the Nation, and about 3 percent of the plant food. The difference in those figures reflects the higher analysis of our materials, which range from 33½ percent plant food to 74 percent plant food.

My point is that if you take a small percentage of the total production and distribute it over the 35 States, in an educational program it is obviously not important as the source of supply. It is important however, in that by introducing the materials to farmers and encouraging them to try out new uses for fertilizers—improved uses such as are recommended by the Department of Agriculture, by their State colleges and county agents—it builds a new market for better fertilizers, improves agricultural processes. It has helped produce this tremendous expansion in the production of commercial fertilizers that Mr. Young and Dr. Curtis have described.

Mr. RABAUT. What does "inactive test, demonstration counties" mean?

TEST DEMONSTRATION PROGRAM

Mr. WAGNER. The number of test demonstration farms in our program has decreased from about 26,000 in 1947 to 2,390 in the current year, and is budgeted to include only 1,800 next year.

The test demonstration program is being much more closely controlled now by the county agents. The farms are under closer supervision than they were when there were so many of them, and many of the counties in the United States which tried the test demonstration program initially have profited by their experience and are now using their fertilizer in this educational sales program which I mentioned.

In the educational sales program the farm is subject to less close supervision by the county agent. Fertilizers are sold by the distributor for limited use for specific purposes recommended by the agricultural authorities.

Mr. RABAUT. Farm test demonstrations, $829,000. This program is composed of appropriated funds of $613,000 and corporate funds of $216,000, or a total of the amount mentioned before.

What do you do with this $829,000 in comparison with 1955?

Mr. WAGNER. In 1955, as I mentioned, we have 2,390 farms in this program, and in 1956 we will be able to have only 1,800.

Mr. RABAUT. How much money did you have in 1955?

Mr. WAGNER. $1,009,000, sir.

Mr. RABAUT. Is it reduced in proportion to the reduction in test demonstrations, or is that a poor yardstick for measurement?

Mr. WAGNER. The funds provided in the 1956 budget, Mr. Chairman, will permit carrying on a program on only about 1,800 farms. The proportion of funds to farms is fairly direct.

I might say, as I indicated earlier, that this program has been reduced very considerably over a number of years.

Mr. RABAUT. Who supervises those programs? Is it the county agent?

Mr. WAGNER. The county agent works in direct contact with the farmer.

I might tell you a word about that if I may.

Mr. RABAUT. All right.

Mr. WAGNER. The business of getting a farmer to try a new fertilizer after you have proven it out in the greenhouse and in the experiment stations, is an educational job. The fertilizers, if they are more concentrated, cost more per bag. The individual farmer naturally is reluctant to try something new himself until he has seen it demonstrated somewhere else.

He has to be convinced that this new fertilizer will work and he has to be convinced most often not on the basis of a bulletin from his experiment station but on the basis of seeing it tried out on a practical farm.

These test demonstration farmers, who are in the various areas I showed you on the map, are picked by their neighbors as the people to try out these new fertilizers under the close supervision of their county agent. They agree to keep complete records on their farm operation, to make complete plans for their farm operation as recommended by the county agent, and to make the results of their operations and their records available to their neighbors and to county agents.

The county agent can use their experience in developing a better program for guiding other farmers who are not test demonstration farmers.

Neighbors are invited to come and see what happens on these farms, either individually or on the basis of regularly conducted tours.

We recently made a survey of some 500 farms in Virginia which were not test demonstration farms but in the neighborhood of 25 test-demonstration farms.

The interviews with these farmers indicated that they were most often influenced in trying out something new by their contacts with other farmers; 65 percent said that the test demonstration farmers were the ones who most often tried something new in their community.

Over half of these test demonstration farmers said they encouraged 10 or more farmers to try out some new practice, and half of the farmers who had made a test demonstration tour, going over several farms, said that as a result of it they tried out at least one new practice, and the new practice most often tried involved the use of improved fertilizers.

FERTILIZER RESEARCH

Mr. FOGARTY. What is the total amount in this budget request for research of all kinds?

Mr. WAGNER. I don't know that I have that figure, Mr. Fogarty. We can supply it for you.

Mr. FOGARTY. How much are you asking for research and development of fertilizer?

Mr. YOUNG. $1,238,000.

Mr. FOGARTY. That is all research?

Mr. YOUNG. Yes, sir.

Mr. FOGARTY. How is your budget prepared? Do you submit the request first to the General Manager? Is that the way you do it, Mr. Young?

Mr. YOUNG. We recommend the amounts we want, yes.

Mr. WAGNER. The Board of Directors approves these budgets, Mr. Fogarty. The budgets are first prepared by the operating divisions which will spend the funds.

Then they are proposed to the budget office which is part of my office. Mr. Van Mol is our chief budget officer.

The program is reviewed there. Mr. Van Mol consults with me about it. We may then talk with the operating divisions about it and prepare a program which we are ready to recommend to the Board of Directors.

It is then presented to the Board. The Board discusses it with the staff, has an opportunity to ask for changes of one kind or another. If so those changes are made and presented to the Board again, and finally the Board approves a budget which goes to the Bureau of the Budget and then to the Congress.

Mr. FOGARTY. Let us take this $1 million of research, Mr. Young. What did you originally request of the local budget office? What was your original request?

Mr. YOUNG. I believe it was approximately that.

Mr. FOGARTY. In all these steps there was no change, no give and take at all?

Mr. YOUNG. The whole detailed program is first reviewed by my office before submission to the budget office and General Manager. Occasionally an item will be dropped and something else added as a result of these reviews.

Mr. FOGARTY. Would you supply for my information what you originally asked for, what Mr. Wagner's office said, what the Directors recommendations were, and what the Bureau of the Budget allowed so we can follow it step by step?

Mr. WAGNER. We will do it, sir.

(The information requested is as follows:)

Research on fertilizer products and processes

Estimate originally submitted by manager of chemical engineering for fiscal year 1956	$1,315,000
Reduction made by General Manager on recommendation of the chief budget officer	52,000
Estimate approved by Board of Directors for submission to Bureau of the Budget	1,263,000
Reduction recommended by the General Manager after "allowance" letter received from Bureau of the Budget	25,000
Estimate approved by Board of Directors for inclusion in materials submitted to the Bureau of the Budget for inclusion in the President's budget	1,238,000

Mr. WAGNER. Some of these first discussions between an operating division and Mr. Van Mol's office may be rather informal discussions.

Mr. FOGARTY. I mean anything in the way of a firm request. I don't mean things in the initial stages, but Mr. Young has to make some sort of firm request for funds through the General Manager.

Mr. YOUNG. That is right.

Mr. FOGARTY. On this map some of these States are not involved at all in these fertilizer activities, are they?

Mr. WAGNER. That is right.

Mr. FOGARTY. Why is a State like New Jersey left out entirely—no activities at all?

Mr. WAGNER. Generally those States which have no activity are in that condition as a result of a decision by the State agricultural college in the State.

I believe in some of these areas the particular fertilizers which we produce may not be as effective as they are in other areas, or the State college for some other reason hasn't been interested in participating in the program.

Mr. FOGARTY. There are no specific reasons for New Jersey being eliminated in all these programs?

Mr. WAGNER. No, sir.

Mr. FOGARTY. Mr. Young?

Mr. YOUNG. I know of none.

Mr. FOGARTY. What about Rhode Island, Connecticut, Massachusetts, and Maine?

Mr. WAGNER. I believe the situation is the same in all of those States. Apparently the colleges have not been interested in participating in the program.

Mr. FOGARTY. Are not interested?

Mr. WAGNER. Apparently not.

Mr. FOGARTY. Have they ever been contacted to find out why?

Mr. WAGNER. I believe people in our Division of Agricultural Relations have talked to them, yes. I have not asked them specifically why people in each of these States are not interested.

Mr. FOGARTY. Do you think these activities you are carrying on should be of some interest to these States?

Mr. WAGNER. They have been of considerable interest to the States where they are carried on; yes, sir.

Mr. FOGARTY. I notice in New York, Vermont, New Hampshire, all you have in those States are the inactive test demonstrations.

Mr. WAGNER. That is right.

Mr. FOGARTY. They are not taking advantage of these other activities, either?

Mr. WAGNER. That is right.

Mr. FOGARTY. Is there any good reason for that you know of?

Mr. WAGNER. I don't know, sir.

Mr. FOGARTY. What about Nevada?

Mr. WAGNER. I will have to answer your question the same for all of these States.

Mr. FOGARTY. Is there anybody who can give me any specific answers to these questions I am asking?

Mr. CURTIS. Our agricultural relations division is not here. We can supply the information for you.

Mr. FOGARTY. Every once in a while you see these big ads in the paper about a particular type of fertilizer or farm crop. I see them advertised in local newspapers and I am thinking more of these new liquids being developed to help grow better lawns. A couple of years ago there was quite a drive on things about Krillium and liquid fertilizers.

Mr. YOUNG. Yes, sir.

Mr. FOGARTY. How does the general public know whether or not these things are any good? They apparently didn't turn out very well, did they, because I don't see them advertised any more.

Mr. YOUNG. A lot of work is being done on liquid fertilizers today. I am not thinking especially of the lawn application.

Mr. FOGARTY. It has some connection with lawns.

Mr. YOUNG. Yes; however, the greatest progress is being made in the western part of the country on liquid fertilizers, and there is a lot of fertilizer being added to irrigation water as well as by direct application.

I am sure its use is expanding. I know our people have been making a detailed survey and study of what that situation is and are trying to keep up to date on just what is happening in that field.

The trend toward different fertilizers, I am sure, is spreading toward this part of the country, but it is most active in the western part of the country.

Mr. FOGARTY. Are you doing anything in that field?

Mr. YOUNG. I believe at the present time we are chiefly reviewing the picture and trying to keep up to date on the activity in this field. I do not believe our people are actually carrying on any laboratory work on liquid fertilizers at present.

Mr. FOGARTY. There is a great advertising program carried on by oilmen, spraying lawns with some type of liquid fertilizer. Do you know anything about it?

Mr. YOUNG. No, I am not familiar with the details of that work. It is just fertilizer in solution.

Mr. FOGARTY. It probably won't do any harm, but will it do any good?

Mr. YOUNG. Yes; I think it does some good. It has been quite successful in many places.

Mr. VOGEL. You made special reference to Crillium.

Mr. FOGARTY. That was the one thing that came to me.

Mr. VOGEL. That is a soil conditioner and not a fertilizer.

Mr. FOGARTY. It is a soil conditioner, I understand, but I referred to it along with fertilizer because they are both used in conditioning the soil.

Mr. VOGEL. It doesn't give nutrient to the soil.

Mr. PHILLIPS. You put it in if the soil has clay-like properties and it breaks that down.

Mr. FOGARTY. I don't see it advertised any more. That was some 3 years ago.

Mr. YOUNG. Possibly because it is rather expensive.

Mr. FOGARTY. All of these new things are high-priced when they first come out until more is manufactured and the supply meets the demand.

Mr. YOUNG. That is one of the problems with some of the liquid fertilizers. You pay a lot of money for them at the present time.

Mr. PHILLIPS. I want the record to show that before I came on this committee, as the gentlemen on the other side of the table know, I served on the Agriculture Committee, and I represent a district in which the need of fertilizer is basic.

We have in fact done a great deal of work with the phosphate group of fertilizers.

The kind of soil, Mr. Fogarty, has something to do with the use of fertilizers in one part of the country and another, and also the cost of shipment, and also the fact that for a long while TVA declined to send any fertilizer out to California because they felt they could only send a few hundred-pound bags and that was too far away from home, and I think the most honest statement made by the witness on the other side of the table is that TVA is not up to date on some of the experimental work on fertilizers, and I hope that remains on the record.

Also as to liquids, Mr. Fogarty, the problem is very often a matter of the equipment and method of putting it out. You can pour it into an irrigation stream but on an eastern farm it may not be so easy to apply it and the farmer would have money invested in equipment to spread another type of fertilizer and would use that.

Now I want TVA to have all the credit that it possibly deserves in regard to fertilizers, but I dislike to see a record made which appears to give all credit in the fertilizer field to TVA. I sat on the Agriculture Committee and I think we should give some credit to Dr. Mehring, Mr. Jacobs, Dr. Frank Parker and the others who, especially in the course of World War II, worked on much of this fertilizer problem and were responsible for many of the practices and achievements in plant-food concentrates. I think Mr. Jensen will agree with me on that. There were meetings, as you will recall, with the War Food Board (I suspect, Mr. Curtis, there was somebody representing you there) and these men actively and successfully promoted the use of high-analysis fertilizer. One of the things that has built up the big fertilizer use in the United States is the increasing cost of labor and the limitation on farm acreage. The ingenuity of man being what it is, if you limit the acreage he may use for a certain commodity, or in-

crease the cost of labor, he turns around and tries to find offsetting methods or equipment to meet the extra charge on him, because the farmer is always at the bottom of the list. Everybody takes his piece out before it gets down to giving the farmer what he gets for his product, so he proceeds to use fertilizer, which has made it possible, with his lesser acreage, to increase his production per acre and has tremendously increased the use of field equipment, as for example, cotton-picking machines. They cost about $15,000 apiece, and I have seen big farms in the United States with as high as a dozen cotton picking machines in operation.

So these things all balance, and it is the ingenuity of man—I should like to slip in a word—under free enterprise, and using these fertilizers put on in quantity, offsetting the labor costs, the trucking, gasoline, and so forth, all of which the farmer, before that, had to add to the cost of his products.

So I just want the record to show while TVA must have all the credit it deserves, I do not want to see it take credit for something that was produced by the Department of Agriculture.

Mr. WAGNER. That was not my intention, if my testimony seemed to give you that impression. The Department of Agriculture has worked closely with us in TVA.

Mr. PHILLIPS. If you can find one mention in your testimony of the Department of Agriculture, I will take off of the record what I said.

Mr. YOUNG. As a matter of fact, our technical people meet with the Department of Agriculture people.

Mr. PHILLIPS. I know it only too well. I have occasionally in the past met with you. And I did not hear any reference in your testimony either, Mr. Wagner, as to the research and development of phosphates. Triple phosphate was almost entirely a development of the Department of Agriculture.

Mr. FOGARTY. That is not the impression I got. I just thought they were testifying about what they were doing. I did not think they were taking credit away from anybody else or saying that nobody else was doing anything in this field; they were testifying about what they would do with this money if we gave it to them.

Mr. RABAUT. That is right; they are really testifying about TVA and not the Department of Agriculture.

There is one thing I want to ask. You were talking about liquid fertilizers before, under the interrogation of my colleague [Mr. Fogarty] and you said at that time you were not up to date on liquid fertilizers. Is that correct?

Mr. YOUNG. No, sir. I did not mean to imply we were not up to date.

Mr. RABAUT. That is what you said, though.

Mr. YOUNG. If I did, I would like to correct it. I think we are up to date on what is happening. We know other people are studying the problem. What I meant to imply was I do not think we are actually making any liquid fertilizers.

Mr. RABAUT. Is that due to the shortage of appropriations, or what is the reason, or is that a field you do not intend to go into?

Mr. YOUNG. It is primarily because our people are busy on other projects and I think possibly in the future they might get into some work on liquid fertilizer when the opportunity arises.

Mr. RABAUT. Is liquid fertilizer taking precedent over what you call solid fertilizer?

Mr. YOUNG. No.

Dr. CURTIS. We are not only informed about what is going on, but actually have taken part in some developments in the use of liquid fertilizer. We had an arrangement with the Mississippi State College for the use of liquid ammonia, particularly down in the delta where it was unusually applicable. As a result of that, the farmers in the delta not being able to buy liquid ammonia, built a plant of their own and are now using large quantities of ammonia. TVA was in on the initial phase of the use of liquid fertilizer, which is growing and is the basis of the agricultural program in the delta area.

You see, most of the processes give fertilizer in solution, then you have to spend extra money to get it in solid form, which is much more convenient to use. But where they can use liquid fertilizer, that is the cheapest type of fertilizer. As Mr. Phillips said, it depends on the condition of the soil, and so forth.

DIAMMONIUM PHOSPHATE

Mr. PHILLIPS. Now let us talk about TVA. Have you made studies on making diammonium phosphate from phosphoric acid with the electric furnace?

Mr. YOUNG. Yes, sir.

Mr. PHILLIPS. Have you made it with the wet process?

Mr. YOUNG. Yes, sir; we have.

Mr. PHILLIPS. Have those experiments been successful?

Mr. YOUNG. Yes, sir.

Mr. PHILLIPS. Have you issued reports on them?

Mr. YOUNG. I believe a report is in preparation. I am not sure it has been issued.

Mr. PHILLIPS. I think that is satisfactory. Is industry presently making diammonium phosphate with any process you developed?

Mr. YOUNG. Yes; we worked out the electric furnace process of making diammonium phosphate, using phosphoric acid and ammonia, and it is my understanding that that same process is being followed by industry in a couple of cases.

Mr. PHILLIPS. You justify your request for appropriations before this committee almost entirely on the basis of research—that is, development and leadership, shall we say—in the field of research on fertilizer. Now it is true, is it not, that this industrial fertilizer you are talking about is being accepted and is used by farmers all over the country, and it comes from commercial sources? Is not that true?

Mr. YOUNG. I would not think it was true. I recognize some diammonium phosphate is being made; but I think, as in the case of superphosphate and in the case of ammonium nitrate, the real problem is to demonstrate the use of the material.

As far as diammonium phosphate is concerned, we believe it is in the same category as concentrated superphosphate and ammonium nitrate were when we began making them. And what we hope to do is, through the educational and sales program, to demonstrate the use of diammonium phosphate and thereby create a market which industry will have and which does not exist today.

Mr. PHILLIPS. What geographical limitations do you find on the use of ammonium phosphate, or what geological limitations, I should say, what soil limitations do you find on the use of diammonium phosphate? In other words, what is your limit on the use of it by farmers; what controls that use?

Mr. YOUNG. I believe the greatest possibility for use of diammonium phosphate is probably in the Midwest and the Western States.

Mr. PHILLIPS. Almost entirely.

Mr. YOUNG. And that is where we hope to create the market for that material. Also, there is use for diammonium phosphate in upgrading fertilizers used in other parts of the country.

Mr. PHILLIPS. And is it not a fact that the commercial plants that exist today are in the Middle West and Western States?

Mr. YOUNG. The unfortunate thing about plants located today is that they are not located well with respect to the raw materials, and the fact they are not located well with respect to raw materials results in a high-cost production situation.

Mr. PHILLIPS. I read from page 8 of your own statement on fertilizers:

> TVA prices for diammonium phosphate will be related to the estimated costs at which the product could be made by efficient commercial producers operating under favorable conditions, including plant location and availability of economical sources of raw materials. TVA prices will be close to those which might be charged for the product of such commercial producers, with only such price reduction from this base as is necessary to encourage distributors and farmers, who would not otherwise do so, to use this new product.

I am quoting from the Tennessee Valley Authority's statement on diammonium phosphate, with the subhead "A New Material in the TVA Fertilizer Program." It is dated March 23, 1955.

I want to know if you can point out any location in the entire United States which would meet the criteria you set down there for the efficient commercial producer, operating under favorable conditions—what are they—"including plant location and availability of economical sources of raw materials." That means if he is by the sources of material, then he has the shipping problem to the user; if he is convenient to the user and thereby has a reduced shipping cost, then he is not near the economical sources of the raw materials.

Mr. YOUNG. We believe there are several locations that are suitable for the making of diammonium phosphate economically. One of them is on the Mississippi River up along about Memphis. Memphis is located so that raw materials could be received by water transportation and the finished product could be shipped by water. Also in Memphis anhydrous ammonia is being produced.

Mr. PHILLIPS. Then they would have the shipping cost, in that case, of shipping to the user. So you have a balance here which your statement does not recognize.

Mr. YOUNG. Our statement was based on the production costs. Also, there are a number of coke-oven plants in the country that now have byproduct ammonia. Several of those plants are located in areas where there is a source of phosphoric acid.

Mr. PHILLIPS. You see, this raises the question of what is the object of TVA in this research field. Is their object, as they state it, merely to produce a kind of phosphate which is proven to be advantageous to farmers and then permit the manufacture of that product by

commercial producers, or is the object to go beyond that and you yourself produce it for the use of the individual farmer? So now I ask how much diammonium phosphate do you expect to make in the fiscal year 1956?

Mr. RABAUT. Do you want him to answer your other question?

Mr. PHILLIPS. He can answer them both now. How much diammonium phosphate do you expect to make in fiscal year 1956?

Mr. YOUNG. We believe in 1956 our program requirements will be approximately 20,000 tons.

Mr. PHILLIPS. You say 20,000 tons. Now on page 69 of your justifications before this committee you say:

> During 1956, a total of 43,000 tons of the material will be produced.

General Vogel, in writing to some commercial producers, said you would produce from 30,000 to 40,000 tons.

And on page 71 of your justifications which you now have before this committee right at this moment, you say you expect to use 1,000 tons of diammonium phosphate in your research work. Thus you are testifying you expect to use 1,000 tons for the purpose you are justifying before the committee and to sell 39,000 tons in competition with private industry. Is that right?

Mr. WAGNER. May I answer that? There are several parts to your question; I am not sure I will get them all, but I will try.

The budget justification which you have before you was prepared initially nearly a year ago. The 43,000-ton figure which appears there is the maximum capacity of the TVA plant. We have since talked with the colleges about this material, and it now appears they will not be able to take more than about 20,000 tons in this coming year.

The 1,000-ton figure which appears on page 71 is the amount that would be used in the test-demonstration program. The balance of it would be used in the educational sales program—a program in which the fertilizer can be used only for certain purposes agreed upon by the State colleges of agriculture, the USDA, and the TVA. When the farmer buys some of this fertilizer material, he is advised by his distributor as to how it may be used.

The 30,000- to 40,000-ton figure which you mentioned in the letter to General Vogel——

Mr. PHILLIPS. Correspondence between General Vogel, apparently, and some private producers.

Mr. WAGNER. Do you have the date of that?

Mr. PHILLIPS. That is a letter dated February 23, 1955. No; I beg your pardon; General Vogel is clear. The quotation is,

> Upon talking to General Vogel's associates, we find the annual tonnage which they (TVA) plan to produce is from 30,000 to 40,000 tons.

And I may interpolate there by saying the writer of the letter has asked for time to come in and testify as an outside witness before the committee.

Mr. WAGNER. The last figure, Mr. Phillips, is the 20,000-ton figure. I believe it is mentioned in the statement to which you refer that was prepared by TVA. That statement is quite complete concerning TVA's plans for diammonium phosphate. Would you like to include that in the record?

Mr. RABAUT. We will put it in the record, if you think it should be in the record.

Mr. WAGNER. It is the most complete statement that we have concerning diammonium phosphate.

Mr. RABAUT. Without objection, we will incorporate it in the record.

(The statement above referred to is as follows:)

DIAMMONIUM PHOSPHATE A NEW MATERIAL IN THE TVA FERTILIZER PROGRAM

GENERAL

The TVA Act of 1933 transferred to TVA the World War I Government-owned nitrate plants at Muscle Shoals, Ala., and directed their use to cheapen the cost of fertilizer to farmers by producing new and improved forms of fertilizer materials and to provide munitions for national defense. The act further authorized TVA to distribute its fertilizers to demonstrate their use and the use of improved fertilization practices in agricultural development and soil conservation.

When a new fertilizer is developed in the TVA laboratory at Muscle Shoals, it is first tried out in greenhouse tests and on small field plots in research projects conducted by State agricultural experiment stations. If it appears promising, it is next introduced to farmers and is used by them in various farming systems to demonstrate its use under closely supervised conditions. This phase—the test-demonstration program—is conducted by the agricultural-extension services and cooperating farmers. Finally it is introduced and demonstrated on a wider scale through educational sales programs. The educational sales program limits fertilizer to certain uses under less technical supervision than is the case in test demonstrations. The program is conducted by selected distributors, both farmer cooperative and industry distributors. Depending on the nature of the material, the content of the educational program, and the response of farmers and other cooperators, the test-demonstration and educational-sales programs may proceed simultaneously insofar as some certain uses are concerned. The nature of the educational sales program in each State is determined jointly by the land-grant college, the distributors of TVA fertilizer, and TVA, in cooperation with other agencies of the United States Department of Agriculture.

The output of the TVA fertilizer plant is but a small part of the national production—1½ percent of the tonnage and 3 percent of the plant nutrients in fiscal year 1954. However, the effect of this limited production of TVA fertilizer has been widely beneficial to both industry and agriculture. The results of TVA research and process development are available royalty-free to the industry and are being widely applied. Farmers are adopting better fertilization practices and improved farming systems and are demanding more economical sources of plant nutrients in increasing quantities. Two examples will illustrate the promotional effects of the TVA educational fertilizer program.

Twenty years ago concentrated superphosphate was not widely used. Farmers bought low-analysis phosphatic fertilizer almost exclusively. The industry was skeptical of the concentrated product and some college agronomists doubted that farmers would ever use it. In 1934 United States production of concentrated superphosphate was about 70,000 tons. TVA improved the process and product and began to demonstrate its uses through educational programs. Farmers began to use it. The annual output of this material by the fertilizer industry is now about 900,000 tons, exclusive of TVA production.

During periods of national emergency, TVA's chemical operations are diverted from its fertilizer-development program to the national defense effort. For example, during World War II, in addition to supplying approximately 60 percent of the elemental phosphorus requirements of our Armed Forces, TVA supplied large tonnages of carbide, anhydrous ammonia, ammonium nitrate liquor, and ammonium nitrate crystals to the war effort.

After the military requirements were satisfied, TVA resumed its research and development work on fertilizers. In 1943, the use of ammonium nitrate as a fertilizer was almost unknown. TVA, its distributors, and the colleges introduced ammonium nitrate to farmers in a widespread educational and demonstration program. It is now used as a major source of nitrogen for direct application. In 1953, farmers used about 650,000 tons of ammonium nitrate, exclusive of the amount supplied by TVA.

The results of TVA experience with these major products offer assurance that similar benefits for both agriculture and industry can be gained through the introduction and demonstration of diammonium phosphate by TVA in a similar program.

PRODUCTION OF DIAMMONIUM PHOSPHATE BY TVA

Diammonium phosphate is the latest high-analysis fertilizer material to be produced by TVA in plant-scale operations. This followed several years of laboratory and pilot-plant work on the process. It is the first multicomponent fertilizer produced by TVA beyond the pilot-plant stage for use in the research and educational programs described above.

Diammonium phosphate is the most concentrated solid fertilizer yet produced in TVA plant-scale operations. It can be produced by the use of either electric-furnace or wet-process phosphoric acid. When electric-furnace acid is used, a material with a plant food content of 74 percent can be produced: 1 ton of this material contains almost as much plant nutrient as 3 tons of a mixed fertilizer of the average analysis now used by farmers. Because of its high concentration, diammonium phosphate offers an opportunity for lowering the costs of plant food to farmers through savings in costs of transportation, bagging, handling, and spreading on the land particularly in parts of the country that are distant from basic fertilizer raw materials.

As is the case with other TVA fertilizer activities, production and distribution of diammonium phosphate are designed to benefit present and potential producers and consumers of the material. Many of the problems encountered in going from pilot-plant to demonstration-plant operations will be solved, and this information will be available to the fertilizer industry. The product will be used in TVA's programs for the introduction of new materials so that best methods of use may be determined and potential markets may be fully developed.

TVA's production of diammonium phosphate does not involve a new plant. Some existing facilities have been modified which provide for a capacity of about 40,000 tons annually. Actual tonnage produced will depend upon the amount which farmers will use in the educational programs for which it will be distributed.

Initial production in fiscal year 1955 will be less than 5,000 tons for all program uses. Under conditions which an now be foreseen, about 20,000 tons will be produced in fiscal year 1956 for basic agronomic research, farm test demonstrations, and educational sales. This compares with a potential market for commercial production of several hundred thousand tons annually.

DISTRIBUTION OF DIAMMONIUM PHOSPHATE BY TVA

Diammonium phosphate will be used in all of the proograms heretofore found effective in achieving introduction of new fertilizers and developing the best methods of their use. In spite of the apparent advantages of the material, its high cost per ton (because of its high concentration) may be a deterrent to farmer acceptance. Furthermore, the economics of the production and distribution of diammonium phosphate, in relation to alternative fertilizers, are such that considerable work will be needed to determine the geographic areas and the agronomic uses in which the material produced commercially will be advantageous to farmers.

BASIC AGRONOMIC RESEARCH

Results of experiment station tests of diammonium phosphate from pilot-plant operations have shown satisfactory crop response on test plots. They have further indicated that the physical condition of the product is satisfactory. Small quantities of the product will be used in more extensive tests conducted by the 11 experiment stations with which TVA has formal research projects and at stations in other States which want to include it in their fertilizer testing work.

FARM TEST DEMONSTRATIONS

Diammonium phosphate will be used on test-demonstration farms in an intensive educational program under the supervision of the agricultural extension services of about 20 States. Its use in this program offers the best opportunity for rapidly acquainting county agents, land-grant college personnel, other professional agricultural workers, and farm leaders with the product. In this program, emphasis will be directed toward the following:

1. Demonstrating, on practical farms, the most advantageous specific uses for this product.

2. Determining and demonstrating the place of diammonium phosphate in complete fertilization programs under different systems of farming.

3. Evaluating the economic returns from use of diammonium phosphate under different soil and climatic conditions.

4. Obtaining farmer appraisal of crop response, storage behavior, and spreading qualities of the product.

Farm test-demonstrations involve close cooperation between the farmer and the extension service. Fertilization and crop systems are carefully planned, and detailed records are kept by the farmer in order that the results of his work may be adequately appraised.

USE IN THE EDUCATIONAL SALES PROGRAM

In addition to the more carefully supervised and reported use of diammonium phosphate on test-demonstration farms, the material will be used in educational sales programs worked out State by State among the land-grant colleges, distributors, TVA, and USDA agencies. Carrying the educational program to the farmers through the sales process is a distributor function, using information supplied by TVA and the colleges. Wholesalers will aid local dealers and farmers in how to use and handle the product and in exploring its adaptability for use in mixtures and in bulk spreading. Local dealers will gain experience in promoting demonstrations of the use of diammonium phosphate. In addition to gaining information from others, the farmers will supply information on their experience with the material.

Tests made to date demonstrate that diammonium phosphate can be used with little risk of unfavorable experience by farmers who buy it for presently known uses. In these cases close supervision of farming systems and the maintenance of detailed records are not required, as in farm test demonstrations. The uses to which the material may be put will be limited. Potential cost of diammonium phosphate commercially produced appear to favor its immediate use as a material for direct application in about half of the 35 States in which TVA now has educational sales programs with selected wholesale distributors.

A portion of the product will go into high-analysis mixtures with potash and other materials to make recommended ratios of the three major plant nutrients. In areas where potash is required, the outlook for its use in high-analysis mixtures and in blending and bulk spreading operations is favorable. Some of the material may be useful to dry mixers in upgrading the mixtures they are now able to produce with their limited equipment, thus enabling them to lower the cost of plant nutrients. Mixers will be permitted to use it in this way only if the resulting product contains a plant food content of at least 40 percent. Deviations below this percentage may be made to fit particular conditions.

DISTRIBUTION AND PRICING POLICY

Diammonium phosphate will be made available for distribution in any State now having a cooperative educational program with TVA where the material is suitable for use and where it could economically be supplied by a potential commercial producer. Present plans provide for TVA production of diammonium phosphate for about 5 years, depending upon results obtained on the farms and upon how quickly industry makes efficient use of this process.

TVA prices for diammonium phosphate will be related to the estimated costs at which the product could be made by efficient commercial producers operating under favorable conditions, including plant location and availability of economical sources of raw materials. TVA prices will be close to those which might be charged for the product of such commercial producers, with only such price reduction from this base as is necessary to encourage distributors and farmers, who would not otherwise do so, to use this new product.

Preliminary estimates of production costs at favorable locations indicate that commercial producers with an economical source of ammonia and phosphoric acid could sell diammonium phosphate at about $120 per ton of material, f. o. b. such locations, with a margin for profit. Because of the educational program in which the material will be used, the resale price, or the price at which this material leaves the TVA plant for delivery to wholesale purchasers, is set at $110.49 a ton, bagged, f. o. b. Sheffield, Ala. In some cases slight deviations are made from this price for services rendered. This price is well above TVA's cost of production.

RELATIONSHIP TO OTHER PRODUCERS

According to available information there are 3 producers of diammonium phosphate for fertilizer use, 1 located in California and 2 in Colorado. These have come into operation only recently. Their probable combined sales for calendar year 1955 are understood to be about thirty or forty thousand tons. Besides these, two producers of diammonium phosphate for food and chemical uses are located in Illinois and Michigan. It is understood that these firms sell diammonium phosphate in small quantities for use in high-priced fertilizer specialties, such as transplanting solutions.

The differential between prices for TVA diammonium phosphate and the prices of the potential commercial producers is occasioned by the education and demonstration objectives of the fertilizer program. In the case of ammonium nitrate, where a differential also exists to promote fertilizer education, the use of commercial ammonium nitrate has steadily increased, and TVA is confident that experience with diammonium phosphate will be equally favorable. Although this material does not offer possibilities nationally that are comparable to ammonium nitrate and concentrated superphosphate, it should develop an ultimate market of several hundred thousand tons annually. Development of this market should generate new commercial production of diammonium phosphate which will provide new opportunities for the use of byproduct ammonia and an additional outlet for phosphoric acid. Many present producers of byproduct ammonium sulfate, a relatively low concentration fertilizer whose use is declining, can readily convert their facilities to make this new product. Demonstration-scale production and distribution by TVA will expedite the ultimate and economical development of the process for the benefit of many segments of industry and many farmers.

Mr. PHILLIPS. Then do I take it you want the money figure in your justification reduced accordingly?

Mr. YOUNG. Present plans contemplate the need for producing 20,000 tons.

Mr. WAGNER. The tonnage shown would be reduced; the total plant food output of the chemical facilities, however, will remain about the same. The amount of raw material used in producing diammonium phosphate will affect our production of concentrated superphosphate, or our ammonium nitrate production, or the amount of phosphorous we would sell for munitions.

Mr. PHILLIPS. How do you plan to use the output of this diammonium phosphate; how much do you expect to sell and how much do you expect to use for demonstrations?

Mr. WAGNER. The amount that would go into the educational sales program is about 19,000 tons; the amount that would go into the test-demonstration program is about 1,000 tons.

Mr. PHILLIPS. You do not expect to sell any of it to farmers without the usual strings tied to it?

Mr. WAGNER. No, sir; it would be restricted to the educational program.

We estimate that there should ultimately be an annual market for several hundred thousand tons of this material. The situation is similar to when we began the manufacture of concentrated superphosphate in the middle or late thirties. Many people in the industry objected strenuously. The national annual production at that time was 70,000 tons. They said, "That is more than enough to meet the demand." There are about 1 million tons produced today. We hope a similar market growth can be developed for diammonium phosphate.

Mr. PHILLIPS. I think right here I had better interpolate something so that we get it in the record; that is, this whole fertilizer program, as you well know, is in a state of reexploration. Just as Mr. Wagner

said when triple phosphate, as I call it, or superphosphate as Mr. Wagner calls it, first came on the market, there was a division among the users; first the school that said it was no good and said it should not be used, and then the school that reported an excess of demands in the hope by putting on twice as much as the recommendation you would get twice the production in yield.

Those things go like that and then settle down, and it is no surprise to those of us who represent agricultural areas that the sales have gone up beyond the 1 million-ton figure. But this I think should be put on the record, perhaps, in view of the fact we are going to have the Atomic Energy Commission later on and question them on the same subject: The tests we are now making with the use of isotopes are giving us an entirely new picture on a lot of things, including the use of fertilizers, and I will ask if you are using any of them in your experimental work down at TVA?

Mr. YOUNG. Do you know if Dr. Elmore is doing any work with isotopes, Dr. Curtis?

Dr. CURTIS. We are doing only a very little of it, the reason being the Department of Agriculture is doing a very excellent job in testing those things.

May I make a little further remark about diammonium phosphate?

Mr. RABAUT. Yes.

Dr. CURTIS. Diammonium phosphate is a material that is now manufactured by fertilizer manufacturers on a very limited scale. It is not a fertilizer that is well known in agriculture. As Mr. Young has said, there are only three small producers that recently got into operation. Unfortunately, two of them are poorly located. We would like to see diammonium phosphate widely used in those areas in which it is economical and the soil conditions permit its use, and we are going to do with diammonium phosphate just the same job as we have done with other materials—encourage farmers to use it and educate them in its use, and then get out of the way and let industry do the job.

Mr. PHILLIPS. That is a very good statement, Dr. Curtis. I think you have had a little help from this subcommittee, in the past, in getting out of the way when you wanted to get into the field of production away beyond the needs of research.

Now coming back to isotopes, I am told the use of fertilizers in the tobacco fields of the Carolinas has completely changed. By the use of them, we have discovered that certain fertilizers being put on those fields were not reaching the plants at all, so that has completely revised the whole fertilizer picture. And that same thing is true of some of the western commodities. I have in mind tomatoes, where we discovered the proper fertilizers to reach the plants.

Now my point is we have reached a point in research where you cannot put on the market any fertilizer at all without the sort of test that would be carried on by TVA, or the Department of Agriculture, which actually is the one doing it today, with the use of isotopes; because that is the only way we can tell whether a fertilizer is doing what we want. And we are going through the same thing with diammonium phosphate that we went through with superphosphates, and I think we can save a lot of time on the basis of past experience.

Now, do you buy commercial diammonium phosphate? Where do you get your basic diammonium phosphate; do you produce all of this that you use, or do you buy any?

Mr. YOUNG. We produce it from phosphoric acid and ammonia.

Mr. PHILLIPS. You do not buy any?

Mr. YOUNG. No.

Mr. PHILLIPS. What are you doing in TVA to evaluate the economic position of this fertilizer in agriculture? You say you produce the thing, and that is all right; but what are you doing to determine just exactly what its economic value is in agriculture?

Mr. YOUNG. It is the objective of the proposed test demonstration and educational sales program to determine the economic value of diammonium phosphate in agriculture.

Mr. PHILLIPS. What would it cost to manufacture? Dr. Curtis says—and I have a very high regard for Dr. Curtis—that probably when you have found out what this will do, you will get out of the way; but you are not figuring at the present time, according to any evidence before this committee, on just exactly what it will cost the manufacturer to produce and sell it. The reason I say that is because in your own statement, again on page 9, you say the indications are that commercial producers with economical sources of ammonia and phosphoric acid, could sell diammonium phosphate for about $120 a ton, and here you are selling it for delivery at $110.49 a ton bagged, f. o. b. You are selling it today for less than you say it can be produced by commercial producers. And I challenge that figure of the commercial producer; because the lowest price we can get from any manufacturer of it is not $120, but is in the neighborhood of $128 to $143, including all of the costs which the commercial producer has to include.

Mr. WAGNER. The difference between the $120 figure and the $110.49—the reason for that difference is explained in the diammonium phosphate statement and I do not believe I need to repeat it, or would you like me to do so?

Mr. PHILLIPS. Not unless you want to.

Mr. WAGNER. It is in the statement. The basis for that estimate of $120 either Mr. Young or Dr. Curtis can answer for you, I believe.

Mr. YOUNG. The basis, as I mentioned before, is a presumed suitable economical location for raw materials and is calculated on the basis of what it would cost industry, or what industry should be able to sell the product for, including a return on the investment.

Mr. PHILLIPS. If you have already testified there is such a place in the United States, I do not know it; but, if you can tell me where it is, I would like to know where you are going to get all of those factors just as an ideal balance in one location.

Mr. YOUNG. We believe it could be produced in Memphis.

Mr. PHILLIPS. You said that; but then the distance of Memphis to, say, California, Arizona, Idaho, or the Middle Western United States is greater than it would be from Denver where there already is a factory.

Mr. YOUNG. Of course you have to recognize, too, that the freight on the finished product is probably much less than the freight on the raw materials.

Mr. PHILLIPS. I would think myself the most favorable place for making it would be Utah, but I am not plugging Utah. I am trying to say that here we have another case in which the operating cost, overhead, and amortization of the cost, bags and bagging, and the markup that a private producer has to make, and the cost at which he is buying ammonia, which presently is $85 a ton f. o. b. wherever it is produced, who is making ammonia now on a sufficient scale—it would be $90 delivered, as an average in the United States—all of those things have to be taken into consideration.

I am just challenging your statement on that basis that you can make it at the present time to sell for $120 a ton.

I would like you to figure it out for me and put it in the record and save our time.

Mr. YOUNG. Our figures are based on what we think is sound reasoning, and we believe it can be done with wet phosphoric acid.

Mr. PHILLIPS. What I want to know is if you will make an analysis of your high-analysis items that you figure into the cost, and the sources of supply.

Mr. YOUNG. We can supply that.

(The information requested is as follows:)

ESTIMATES OF COMMERCIAL PRICE OF DIAMMONIUM PHOSPHATE

Estimates were prepared of the price of diammonium phosphate made by commercial producers using two processes. In one process it was assumed that electric furnace phosphoric acid would be purchased and used at a favorable location by a coke oven operator. In the other process it was assumed that wet-process phosphoric acid would be produced and reacted with purchased anhydrous ammonia.

The results of these estimates are tabulated below. All prices are for bagged products, f. o. b. manufacturing plant.

Process	Location of plant	Product		Estimated selling price, dollars per unit
		Tons per year	Grade	
Electric furnace acid, byproduct ammonia from coke ovens.	Chicago	40,000	21-53-0	$1.62
Wet-process acid, purchased anhydrous ammonia	Memphis	40,000	18-47-0	1.58

The estimates indicate that diammonium phosphate could be produced at a favorable location and sold commercially at a price equivalent to $120 per ton of 21-53-0 product.

Estimated cost of production and selling price of diammonium phosphate made by a coke-oven operator at a favorable location such as Chicago

[Basis: 40,000 tons bagged 21–53–0 diammonium phosphate per year]

	Cost per ton DAP
Phosphoric acid, 75 percent H^3PO^4 (1.000 ton, at $82)	$82.00
Ammonia, byproduct in coke-oven gas (0.269 ton, at $85)	22.90
Raw materials cost	104.90
Operating labor	1.79
Maintenance	1.12
Fuel, equivalent of 0.4 thousand cubic feet natural gas at 30 cents	.12
Electricity, 30 kilowatt-hours, at 5 mills	.15
Supplies, 5 percent of operating labor	.09
Property tax, 1 percent of $400-000 per year	.10
Insurance, 1 percent of $400,000 per year	.10
Analyses	.20
Depreciation, 7 percent of $200,000	.35
Bags, 20 bags per ton	2.80
Plant overhead, 50 percent of labor	1.18
Operating cost	8.00
Production cost	112.90
Sales and administrative expense	3.00
Total cost of sales	115.90
Return on investment,[1] 30 percent of $500,000 per year	3.75
Selling price, f. o. b. plant	119.65
Selling price per unit of plant nutrient	1.62

[1] Investment for pricing includes fixed investment and working capital.

Estimated cost of production and selling price of diammonium phosphate produced by the wet process at a favorable location such as Memphis, Tenn.:

TABLE I.—*Estimated cost of production of phosphoric acid*

[Basis: 19,310 tons P_2O_5 in acid per year]

Item	Price	Annual quantity	Annual cost	Cost per ton P_2O_5 in acid
Florida phosphate pebble, 32.5 percent P_2O_5.	$11.79 [1]	62,880 tons	$741,355	$38.39
Sulfuric acid, basis H_2SO_4	$20	51,650 tons	1,033,000	53.50
Hydrated lime			30,000	1.55
Operating labor			42,289	2.19
Maintenance labor			19,188	.99
Maintenance materials			19,188	.99
Electricity	5 mills per kilowatt-hour.	3,278,000 kilowatt-hours	16,390	.85
Supplies			2,114	.11
Analyses			4,000	.21
Property tax			8,240	.43
Insurance			8,240	.43
Depreciation			57,680	2.99
Plant overhead			30,739	1.59
Cost of production of acid				104.22

[1] $5.65 per gross ton, f. o. b. Florida mines, plus $6.52 transportation cost by water plus $0.92 unloading to cars and switching.

TABLE II.—*Estimated cost of production of diammonium phosphate*

[Basis: 40,200 tons 18–47–0 per year to storage]

	Price	Annual quantity	Annual cost	Cost per ton 18–47–0
Phosphoric acid, basis P_2O_5	$104.22	19,310 tons	$2,012,488	$50.06
Ammonia, anhydrous NH_3	86.00	9,500 tons	817,000	20.32
Operating labor			85,959	2.14
Maintenance labor			19,188	.48
Maintenance materials			19,188	.48
Electricity			24,037	.60
Fuel, natural gas	0.23	218,000,000 cubic feet	50,000	1.25
Supplies			4,298	.11
Analyses			2,000	.05
Property tax			6,730	.17
Insurance			6,730	.17
Depreciation			47,110	1.17
Plant overhead			52,574	1.31
Cost of production, 18–47–0 in bulk storage				78.31

TABLE III.—*Estimated cost of bagging and shipping diammonium phosphate*

[Basis: 40,000 tons bagged 18–47–0 per year]

Item	Price	Annual quantity	Annual cost	Cost per ton 18–47–0 loaded
		Tons		
Diammonium phosphate	$78.31	40,200	$3,148,062	$78.31
Operating labor			46,276	1.16
Maintenance labor			6,461	.16
Maintenance materials			6,461	.16
Electricity			2,954	.07
Fuel, gasoline			400	.01
Bags			112,000	2.80
Supplies			2,314	.06
Analyses			4,000	.10
Property tax			2,050	.05
Insurance			2,050	.05
Depreciation			14,350	.36
Plant overhead			26,369	.66
Production cost, 18–47–0 loaded for shipment				83.95

TABLE IV.—*Estimated price of diammonium phosphate*

[Basis: 40,000 tons bagged 18–47–0 per year]

Item	Annual cost	Cost per ton 18–47–0
Cost of production	$3,358,000	$83.95
Sales and administrative expense [1]	120,000	3.00
Total cost of sales		86.95
Return on investment,[2] 30 percent per year before income tax	636,600	15.92
Manufacturer's selling price, f. o. b. Memphis, in bags		102.87
Selling price per unit of plant nutrient		1.58

[1] Includes depreciation on fences, roads, offices, and shops.
[2] Investment for pricing includes (1) total cost of construction, and (2) working capital.

Mr. PHILLIPS. And some evidence where you figure you are going to get the supply of ammonia.

Mr. YOUNG. May I also mention with respect to these companies in the West that are now making diammonium phosphate, we of course want to be helpful to those people. Both of the producers have been through our plant and we have tried to render them all the technical assistance we can. We want to continue to do that. We

think it is unfortunate they are located as they are with respect to the production cost of this material.

Mr. PHILLIPS. I want to ask you why you cannot do as well as the Department of Agriculture. Out in my area the Department of Agriculture developed some of the best methods we have in the production and marketing of orange concentrates and down South they developed peanut butter methods; but, when they had developed an ample supply to stimulate the market, they never went in the business in those things; they figured out how to do it and let somebody else take it from there. I think you ought to let them take it from there again and save TVA some money in this budget.

DEVELOPMENT OF TRIPLE SUPERPHOSPHATE

Mr. YOUNG. Well back in 1938, when triple superphosphate was being produced at the rate of 70,000 tons a year, the fertilizer publications said it was not new, that it had been known for 30 years. Since that time, as we have said, the market has been greatly expanded. We think that our efforts in this field have been beneficial to the American farmers, and that is the primary reason why we are carrying out our development work on fertilizers.

Mr. PHILLIPS. What I want to do is to keep abreast of the times, and I have a question in my mind whether you are actually keeping abreast of the times.

Mr. YOUNG. Let me say this, and I think it is pertinent at that point. Our operation at the chemical plant, both the fertilizer operation and the munitions operation, is essential today and I believe the operation of our plants and the effect of our research is strongly influencing both fields. Is not that right, Dr. Curtis?

Dr. CURTIS. Yes, sir.

Mr. YOUNG. I do not think it is a case of keeping abreast of the times: I think we are away ahead of the times in a lot of our work. We started by developing the electric furnace and put out triple superphosphate. It was claimed nobody would use that material; that nobody wanted high analysis material, that they wanted to continue with low analysis material. In those days, there was very little knowledge of the electric furnace method for producing phosphorous.

Mr. PHILLIPS. Did not the Canadians practically build a new plant to produce superphosphate?

Mr. YOUNG. As far as I know, they never produced phosphorus in those days.

Mr. PHILLIPS. Triple phosphate?

Mr. YOUNG. I thought you said phosphorus. Yes, Canada probably produced triple superphosphate. But the objective which we had at that time for promoting the use of high analysis fertilizer I think has been proven out today. Not only that, but the work we did on our electric furnace process paved the way for the expansion of the present phosphorus industry in this country.

There are seven producers of phosphorus in the country today. All seven of them received technical information from TVA. Four of the plants have received TVA equipment drawings and have used this information in the design of their plants.

In addition to that, our work on phosphorus in our opinion has been at least partly responsible for opening up the western phosphate

reserves and the establishment of phosphorus furnaces in that area. After all, 60 or so percent of the phosphate reserves of this country are in those western fields. Since the beginning of our work on phosphorus we recognized the coming of the day when those western reserves might need to be used, and our work on the electric furnace process I think has resulted in bringing those reserves into use. In fact, approximately 36 percent of the Nation's phosphorus capacity today is dependent on those western reserves for their phosphate.

ELEMENTAL PHOSPHORUS PRODUCERS

Mr. RABAUT. How much business is being done in the United States today that you gave impetus to, of the seven plants you are talking about?

Mr. YOUNG. Such plants as Westvaco Division of Food Machinery and Chemical Corp., Shea Chemical Co., Virginia Carolina Chemical Co., American Agricultural Corp., and so forth.

Mr. RABAUT. I wish you would list them for the record and put in something about the size of their business.

Mr. YOUNG. Yes, sir.

(The information requested is as follows:)

List of elemental phosphorus producers and plant locations:

1. Monsanto Chemical Co., Columbia, Tenn.; Soda Springs, Idaho.
2. Westvaco Chemical Division, Food Machinery and Chemical Corp., Pocatello, Idaho.
3. Virginia-Carolina Chemical Corp., Nichols, Fla.; Charleston, S. C.
4. American Agricultural Chemical Corp., Pierce, Fla.; South Amboy, N. J.
5. Victor Chemical Co., Mount Pleasant, Tenn.; Silver Bow, Mont.; Tarpon Springs, Fla.
6. Shea Chemical Co., Columbia, Tenn.
7. Oldsbury Electro-Chemical, Niagara Falls, N. Y.

NOTE.—The phosphorus plants listed above represent only a segment of the total activities of these companies. Based on an estimate of the total phosphorus capacity of these plants the annual market value of the phosphorus produced is approximately $93 million.

Most of TVA's fertilizer research has been in the phosphate and nitrogen fields. Many producers in these fields have benefited from the TVA work. Evidence of such benefits are seen in the new plants, modernized equipment, and advanced practices that are outgrowths of research by TVA.

In the phosphate field in addition to TVA work on the electric furnace smelting of phosphate rock practically all of the producers of phosphate fertilizers and chemicals have benefited from TVA research. At one time over 300 representatives of fertilizer concerns gathered at Muscle Shoals to observe new methods developed by TVA for manufacturing improved fertilizers. Many fertilizer manufacturers have applied this and other TVA advances in their plants.

In the rapidly expanding nitrogen field TVA has contributed much to producers of ammonia and nitrogen compounds. Most prospective producers of ammonia and products from ammonia have visited TVA to learn of developments that may be applied to their installations and some have been furnished with detailed drawing of our facilities for use in designing their plants.

Mr. RABAUT. Let me say I do not think the witnesses here today are testifying for the Agricultural Department. We have here the TVA and they are sort of a pilot organization in this development of fertilizer. They start the whole thing; they make the studies and, after they are made, why the Agricultural Department, of course, is very interested in their use, as they should be. Now with regard to where the plants should be located, my personal opinion is we have to measure both the quantity of the material that will come in, as to

the cost and the freight, and how close they are to the source of supply, and then how widespread you could make available the product that you produce with relationship to the spread in that regard.

(Discussion off the record.)

VALUE OF TEST-DEMONSTRATION PROGRAM

Mr. JENSEN. I want to say that in my studied opinion the fertilizer branch of TVA has been by far the most valuable program of TVA. I mean to all the people in America. I feel that they have done a good job in developing commercial fertilizer which was so sorely needed a number of years ago and is still sorely needed to produce the crops which are necessary to keep America well fed and well clothed. But, of course, this fertilizer program, the fertilizer facilities, could have gone forward without the establishment of TVA. What I mean is that Muscle Shoals could have been developed as it has been up to date, even without being a part of TVA. But I do think there are some things that should be straightened out in the TVA fertilizer program.

When I was chairman of the Government Corporation Subcommittee of the Committee on Appropriations in the fiscal year 1948, the whole committee, every member of the committee, was greatly surprised when we learned about the number of test farms and the amount of tonnage that was in effect given away to those test farms, and we put a limitation in the bill that year as I remember, on the amount that could be given away on a test-farm basis. And I am quite surprised to know that you still have over 2,300 test farms.

I am wondering just how much the farmer pays for this fertilizer on those test farms.

Mr. WAGNER. On an average, about 45 percent of the TVA f. o. b. wholesale price in fiscal year 1956 and, in 1955, about 30 percent.

Mr. JENSEN. I think that came about, that present reimbursement came about, because of the action of the subcommittee of which I just spoke.

How can you justify 2,300 test farms at this time, at this late date, when almost every farmer in America knows exactly how to use these commercial fertilizers? Of course you have new fertilizers coming out all the time like this diammonium phosphate which has not been developed up to now. But certainly you are still in a giveaway program to a very great degree, which appears to me is not necessary.

What do you have to say about it? I mean all of it is not necessary.

Mr. WAGNER. As I indicated earlier. The test-demonstration program cover 21 States.

The number of farms per State, or per county, consequently is small.

There are a number of uses for fertilizers which the agricultural colleges and the Department of Agriculture believe need further emphasis, since they have not yet been generally accepted. We attempt to expand those uses.

The colleges in the Tennessee Valley States recently estimated that the amount of fertilizer being used in those States is only about 25 percent of the amount which would be used if applications were made at the rates recommended by the colleges. So that while farmers do know about fertilizers, there are both new fertilizers and new uses for fertilizer; in our test-demonstration program, generally, the newer fertilizers are emphasized.

Mr. JENSEN. Is it not a fact that farmers generally speaking would be glad to have you use their farms as test farms, even though they were required to pay the full price of the fertilizer? They benefit simply from the fact that they are being used as a test farm, and you are giving them over half of the value of the fertilizer, as compared to their neighbors, and I am telling you that the neighbors do not like it, when they have to pay the full price. The test farmer not only gets the advantage of the knowledge which you have, but also gets his fertilizer for less than half price.

It does not quite make sense, Mr. Chairman.

Mr. WAGNER. Mr. Jensen, the neighbors, to my knowledge, do not complain about this; they are very glad for the program. Most of them will say that the test demonstration program has helped their community. In a recent survey, in one area, 77 percent of the farmers who were not test demonstrators so stated. The test-demonstration farmers are required to keep complete records. They are required to try new things which their county agent recommends—in many cases ideas which they would not otherwise try out.

Mr. JENSEN. They apparently do not object to it to the extent of writing to the newspapers. Of course, they do not.

Mr. WAGNER. The county agents who work with these people tell us that some of the test demonstrators may not be willing to pay 45 percent. We may have some of them drop out of the program as a consequence. Of course, there are less farms planned for next year.

Mr. JENSEN. How many farmers in the State of Tennessee are now on the test-farm basis?

Mr. WAGNER. I believe we have those figures. In Tennessee, the number was 690 in fiscal year 1954.

Mr. JENSEN. How many such farms are located in the balance of the country?

Mr. WAGNER. Well, let me give you the figures this way, if this will answer your question:

The counties in the Tennessee Valley itself, have 1,394—and the area outside the Tennessee Valley has 639.

Mr. JENSEN. Well, your valley people are not doing too badly; are they?

They are getting over half of their fertilizer paid for.

Mr. WAGNER. We think we have a special responsibility in the valley for soil conservation and agricultural development, according to the act.

Mr. JENSEN. Yes; that the rest of the country pays for.

Do you haul it out to them?

Mr. WAGNER. No, sir; they pay the freight on it. Test demonstration farmers pay 45 percent of our sales price, plus the transportation charges.

Mr. JENSEN. You used to haul it out to the farmers who were located close to Muscle Shoals, and put it in a pile for them. That is what the farmers told me when I was down there. They thought it was wonderful.

Mr. WAGNER. If we did that, I did not know it, Mr. Jensen.

Mr. JENSEN. We visited a farmer down there, and I said "Well, you have to pay for the hauling out here; do you not?"

He said, "No; they bring it out, and dump it in a pile, here."

Mr. WAGNER. I suppose the answer to your question could be found in the records, but the point is that we do not do it now.

Dr. CURTIS. Could I make one remark, Mr. Chairman, to clear up a misunderstanding?

Mr. RABAUT. Yes.

Dr. CURTIS. The test demonstration farmer does not get all of his fertilizer through this plan, at all. In fact, on many of the test demonstration farms, the part that TVA supplies is a drop in the bucket, compared to the total fertilizer used on the whole farm.

Mr. JENSEN. Well, of course, it is mighty nice for the people down there. I do not blame them for liking TVA.

To whom do you sell most of your fertilizer?

Mr. WAGNER. I do not believe I understand your question, Mr. Jensen.

Mr. JENSEN. Well, it is just exactly the way I put it. Who do you sell your fertilizer to?

Who receives your fertilizer? You do sell fertilizer?

Mr. WAGNER. The fertilizer goes to the farmers.

Mr. JENSEN. All right; but to whom? What kind of farmers and what kind of people? Does it go to private utilities, and private industry, or cooperatives, or what?

Mr. WAGNER. The fertilizer is distributed through both farmer cooperatives and private distributors.

Mr. JENSEN. What percentage does the private distributor receive, and what percentage does the cooperative receive?

Mr. WAGNER. In the valley we have about 12 cooperative distributors and about 3 major ones in the Nation, as well as about 15 industry firms. The industry firms handle about 17 percent of the total.

Mr. JENSEN. The cooperatives received about 83 percent of your fertilizer, nationwide?

Mr. WAGNER. That is right, sir.

Mr. JENSEN. Here, we have the TVA, which pays no Federal taxes, selling a product which is produced by a non-Federal taxpaying Government enterprise to the cooperatives, who also pay no Federal income tax. So, here we have another chain reaction where the non-taxpayer receives first priority, and the most favorable treatment, as against the fellow who furnishes the wherewithal to run our Government.

I have had many complaints, and as I said, I have one right here before me. I think all of you know where Shenandoah, Iowa, is located. It is located in the heart of the breadbasket of America.

I have a letter here from a private industry, and I quote a portion of it:

> For years the cooperatives have taken all of the super triple phosphate, and diammonium nitrate from the great Government plant at Muscle Shoals. We, too, sell fertilizer, and a lot of it, and are wondering if we could not get in on this phosphate and nitrogen fertilizer.

Then, he sends me a clipping from the local newspaper, apparently, which states:

> Triple superphosphate, 0470 car now on track. Few tons available. Get yours now. Cheaper when taken off the car. Co-op Oil and Supply Association, Shenandoah, Iowa.

Then, he says,

> The purpose of TVA materials are to develop better methods of production, distribution, and use of fertilizer, rather than to supply material for commercial markets.

What does this mean, "commercial markets?"

Then, I have quite a few letters, or a series of letters, from Bumpero—that is their brand firm fertilizer—of Omaha, Nebr., and there are people in that district who are interested in that company I sent you a copy of a letter from this company, General Vogel, and your reply was that you were only making 30,000 or 40,000 tons of diammonium phosphate, and I believe you said you were selling it for $110.49 per ton.

You claim, General Vogel, that the private companies could sell diammonium phosphate for $120 a ton, and make a profit. The companies claim that it an utter impossibility. They say this is wrong, and that they could not produce diammonium phosphate and sell it at a profit at the price of $120 a ton, even if they manufactured their own phosphate, and their own hydroammonia, and paid no freight on it. They state:

> TVA proposed to produce it at $110.49 per ton, which is ruinous to private industry.

I was also informed that there were some steel mills which are ready to produce thousands and thousands of tons of diammonium phosphate, but they have learned that it is impossible to sell it in competition with TVA prices. So, until they can get a price adjustment straightened out, they are not going to manufacture this product and that certainly will be to the detriment of the American farmers, if private concerns are not able to compete with a Government concern like TVA. Because of that, they will not manufacture this product which is so sorely needed all over the country.

I am wondering if you have taken that situation into consideration, or are you going to still insist on selling this product, which is so vitally needed at a price that will deter private industries from manufacturing it?

General VOGEL. The Board of Directors has considered that very carefully, Mr. Jensen, and the price, as set, is truly established in an arbitrary manner, but it is set considerably ahead of the cost of production, and it is believed that the quantities involved are so relatively small that they should not have the effect of harming the market, as is believed by so many.

Mr. JENSEN. Well, now, who are we going to believe? Mr. Phillips read the record there, where in one statement you said you were going to manufacture 20,000 tons, and at another place you said you were going to manufacture another thirty or forty thousand tons, and a great deal more.

Now, who are we going to believe?

General VOGEL. I think, sir, that you have had the answer to that. I think that you have had the answer to that to the effect that these are estimates made at differing periods of time, and that as time has moved along, those estimates have been reduced over what was originally anticipated.

Mr. JENSEN. I hope that nothing is done which will keep this very necessary item from receiving wide distribution, and being made available to all who need it.

General VOGEL. I am sure that the Board of Directors will wish to do that. I agree with you in that, sir, and I feel confident that they were convinced that greater productivity would be produced by one method or another, and that they would certainly lean to the support of the method which would get the widest distribution.

Mr. JENSEN. I hope we work to that end, gentlemen.

As I stated in my opening remarks, I have always felt that this fertilizer plant at Muscle Shoals, which I visited in 1947, is the most valuable asset to America, and I hope it will continue to be so, but let us attempt to give those who pay taxes just a little break in getting some of this fertilizer which they need so badly.

I do not want to do anything which would keep any of it from any farmer in America. Even though the State of Iowa has 25 percent of the class A soil in America, they still use a lot of fertilizer, and it has done a great job for America.

Of course, I know that private industry has developed fertilizers while the TVA was developing fertilizers, and I think you have worked pretty closely together. I think you have given, as Dr. Curtis said:

> TVA has never missed an opportunity to let private industry in on all of the new developments which have taken place in TVA.

I congratulate Dr. Curtis, and the TVA, for that approach.

The principal thing in which I am interested is to see to it that nothing is done which would deter, as I said before, the farmers from receiving the benefits from not only TVA developments, but from private developments in the fertilizer field.

Does anyone from TVA, any of you gentlemen here, care to make any statement in response to what I have said in my remarks?

Mr. RABAUT. I want to quote from the Tennessee Valley Authority Act. In the opening paragraph, it talks about the properties owned by the United States in the vicinity of Muscle Shoals, Ala., and states that they are to be used in the interest of national defense for agriculture and industrial development, and to improve navigation of the Tennessee River, and to control the floodwaters of the river.

Under section 5 in subsection B, it states:

> To arrange with farmers and farm organizations for large-scale practical use of the new forms of fertilizers, under conditions permitting an accurate measure of the economic return they produce.

Section (c) states as follows:

> To cooperate with National, State, district or county experimental stations, or demonstration farms, for the use of new forms of fertilizer or fertilizer practices, during the initial or experimental period of their introduction, and for promoting the prevention of soil erosion by the use of fertilizers, and otherwise.

So, it goes on, Mr. Jensen.

Mr. JENSEN. Mr. Chairman?

Mr. RABAUT. Just a minute, now.

General Vogel has said that the quantity of fertilizer, and not the quality or anything, but the quantity, is very small in comparison to the amount of fertilizer used, and that it is for test demonstrations, as an incentive to produce better crops, and as an educational feature for the farmers, and you must make some concessions to them to try to get them to use it, and that has been demonstrated by the much larger use of fertilizers today than in former years.

Off the record.

(Discussion off the record.)

Mr. JENSEN. Mr. Chairman, you read the law.

Mr. RABAUT. Yes; I just read an extract from it.

COOPERATION WITH PRIVATE INDUSTRY

Mr. JENSEN. Of course, the law, as I said yesterday, is all inclusive. It covers the whole waterfront, and is designed to foreclose the taxpayers of America. It does not say one word—that law does not say one word about cooperating with private industry which, after all, is the source from which we expect and we have depended upon for the development of our great factories and new methods of doing every kind of business, including the development of commercial fertilizer.

Mr. RABAUT. I would say to my dear friend that in the first sentence of paragraph 3 are the words which he says the law does not mention, and they are: "to cooperate."

Mr. JENSEN. With whom?

Mr. RABAUT. With national, district, and county experimental stations.

Mr. JENSEN. Yes.

Mr. RABAUT. You have to start some place.

Mr. JENSEN. Yes.

Mr. RABAUT. You cannot start with someone who is not in business as yet. We will start here with a new fertilizer, to bring it to the attention of those people who deal in it.

Mr. JENSEN. Yes.

Mr. RABAUT. It states for the purpose of demonstrations to farms with farmers, landowners, and associations.

That is a broad word—associations of farmers or landowners, for the use of new forms of fertilizers.

Mr. JENSEN. I have no objection to that, but my objection is that private industry and private enterprise, the thing which has made America great and which will keep it great, is never mentioned in this law which has set up TVA. They are not asked to cooperate; they are not directed to cooperate, and they are not invited to cooperate.

Mr. RABAUT. Everything they do is wide open to industry. They offer their plans to industry as well as their patents. As an example, on one of the latest developments, five companies have applied for licenses to produce it. It is not in good form here to be arguing, but I think to say that they are not cooperating is not correct.

Mr. JENSEN. I did not say they were not cooperating. I said the law did not even mention that TVA should cooperate with private industry.

Mr. WAGNER. Mr. Jensen, I would like to say a word or two on that.

It seems to me that the basic purpose of the whole TVA Act is to encourage the development of the region by the institutions, including private businesses, that exist there. As we have indicated at some length here this morning, we believe that TVA's fertilizer operation does benefit the private fertilizer industry, although the primary purpose is to benefit the farmers. I believe that TVA's activities in flood control, navigation, power, and other areas also benefit private industry.

Mr. KIRWAN. What is the amount of your request for research in fertilizer products? How much are you requesting?

Mr. YOUNG. $1,238,000.

TVA ENCOURAGES INDUSTRY TO USE RESEARCH RESULTS

Mr. KIRWAN. Getting back to what the chairman and the rest of the members have been saying, you say that TVA actively encourages industry to make use of promising research results?

Mr. WAGNER. That is right.

Mr. KIRWAN. You further say that its laboratories and plants are visited frequently, and that firms who wish to adopt TVA patents may obtain licenses to do so. You further state that about 60 licenses have already been issued?

Mr. YOUNG. Yes, sir.

Mr. KIRWAN. So, you are cooperating all the way along the line with any and everyone from the farmer right up to private industry, who wants to make use of your developments?

Mr. YOUNG. Yes, sir.

Mr. KIRWAN. As I recall, it was stated a few moments ago that there are five different firms who have gone into production on a large scale of some of your developments.

Mr. YOUNG. Those were phosphorous producers; yes, sir.

Mr. KIRWAN. What State is capable of producing the most fertilizer? You said something about the western part of the country.

Mr. YOUNG. The phosphate reserves of this country are distributed in three areas: Tennessee, Florida, and the West, in the Rocky Mountain area. The Rocky Mountain area contains 60 percent, or better, of the phosphate reserves of the country.

Mr. KIRWAN. What State of the Rocky Mountain area contains those reserves?

Mr. YOUNG. The State of Idaho.

Mr. KIRWAN. Which of the two States of Montana and Idaho have the most potential production of phosphates?

Mr. YOUNG. Dr. Curtis would know that.

Dr. CURTIS. Idaho would, I believe.

Mr. KIRWAN. Getting back to what General Vogel said yesterday, we come on down to these facts which all tie together: In Idaho, you have built the great Anderson Ranch Dam, which was designed to assist in the development of that area, and in Montana you have the Hungry Horse Dam, which was created for the same purpose. They were created, were they not, for the production of power, and to help develop cheap fertilizers and phosphates, and other matters of development out there?

Mr. YOUNG. Yes, sir.

Mr. KIRWAN. Who receives, then, the benefits from these structures? The farmers, of course.

Also, it amounts to a relief to him from his taxes if he can produce cheaper.

General VOGEL. Certainly; it will help.

Mr. KIRWAN. The benefits which he derives from these projects amount to more than the few dollars which he is paying in taxes. Therefore, if you can, through research, and the expenditure of $1,238,000 which you have requested here, come up with just a few

items to simplify and develop better and cheaper methods for his use, he is much better off than to pay the few dollars which the Government might lose in the area of the Tennessee Valley on the tax end of it.

I think you are doing a great job down there. Your justifications tell us about the numerous farm people who have adopted your methods, and about the other firms who have taken over your licenses; I believe about 60 licenses have already been issued for TVA processes, or to manufacture and develop the equipment.

You are doing a wonderful job, and as time marches on, and you get this down to the point of one-half of what you are paying for it today, every farmer in the country will benefit.

God only knows that we robbed and looted this country in years past.

When you get on a train at Union Station and pass Silver Spring, from then on until you get to the west coast, you will see millions and millions of acres of abandoned farmland, crying for fertilizer and crying for the things which you are trying to develop. I, again, repeat that just the moment that that train gets a few miles from Silver Spring you begin to see scrub oak and many desolated acres of ground, and areas where everything has gone to pot, but which is some of the finest land on the earth, if properly developed.

This land was robbed and looted in the past, but now you are trying to reclaim it. That is what you are trying to do in TVA.

TVA FERTILIZER ACTIVITIES

Mr. FOGARTY. In regard to this map which you have presented to us showing the TVA fertilizer activities in 1954, am I looking at it correctly when I see that the State of Utah is quite active in this program of test demonstrations?

Mr. WAGNER. Yes, sir.

Mr. FOGARTY. I also note that Colorado is not active in that program. What is the reason for that?

Mr. WAGNER. Colorado has some.

Mr. FOGARTY. It is only about one-tenth of what the State of Utah has.

Mr. WAGNER. That is right.

Mr. FOGARTY. What is the reason for that?

Mr. WAGNER. The only reason which I could give you, Mr. Fogarty, is that there is more intensive interest there.

I do not know whether Dr. Curtis can amplify that or not.

Dr. CURTIS. The number of test-demonstration farms, of course, always depends primarily upon the interest of the agricultural colleges of that area.

Mr. FOGARTY. Are these land-grant colleges?

Dr. CURTIS. Yes, sir.

Mr. FOGARTY. I presume the State of Utah has a land-grant college?

Dr. CURTIS. Yes, sir; they have one located at Logan, Utah.

Mr. FOGARTY. They are not conducting any research with your fertilizers there, according to this map.

Mr. WAGNER. No, sir; that is right.

Mr. FOGARTY. However, in Colorado they are.

Mr. WAGNER. That is right.

Mr. FOGARTY. Still, they do not have any active test-demonstration counties.

Dr. CURTIS. There is a little confusion there. The State agricultural college in Utah is participating in the planning of test demonstrations on the farms. They are not, themselves, at Logan, carrying on the experimental work which they are doing in Colorado.

Mr. FOGARTY. What is the situation in regard to the State of Washington? They seem to be quite active, and have quite a few counties engaged in this program.

Mr. WAGNER. Yes, sir.

Mr. FOGARTY. In what phase of agricultural development are they interested?

Mr. FOGARTY. The State of Washington appears to have so much, and a big State like the State of California does not have any. Are they not interested in it in California?

I also note that the State of Iowa does not have any, either.

Mr. JENSEN. We have a little.

Mr. FOGARTY. Well, it does not amount to much, as shown by this map. That is a great farming country; is it not?

Mr. JENSEN. It is a great free-enterprise State.

Mr. WAGNER. Some of these States have only 1 or 2 counties in which they have test-demonstration farms. The States also contribute to the cost of this work, incidentally, and very substantially.

Mr. FOGARTY. Is it because there is more interest in the Tennessee Valley than there is in any other part of the country that you have more counties making these test demonstrations; is that the principal reason, that they have more interest?

Mr. WAGNER. There is more interest there. The colleges in the Tennessee Valley have taken a great interest in it, because the agricultural problem in the valley was a very severe one in 1933, due to the severe erosion problem and the prevalence of row crops.

However, now there is much more grass and livestock.

Mr. FOGARTY. Was the situation there more severe than in Louisiana or New Mexico or Arizona?

Mr. WAGNER. It was a very severe one. I could not compare it with those other States.

Mr. FOGARTY. In looking at this map, it raises a question in my mind as to whether or not the balance of the country is receiving the advantages out of this money which we are appropriating.

Mr. WAGNER. About two-thirds of the fertilizer which we produce and distribute in these programs, most of it in the educational sales program, goes outside of the Tennessee Valley, and about one-third of it inside.

Mr. FOGARTY. That is the educational end of it.

Mr. WAGNER. The figure includes test demonstrations, but the bulk of the fertilizer is in the educational sales program, sir.

Mr. FOGARTY. What was that figure you gave to Mr. Jensen, as to the number of test demonstration farms in the Tennessee Valley area? I believe you stated there were thirteen-hundred-odd test-demonstration farms in the Tennessee Valley area, and only 600 located out in the balance of the United States.

Mr. WAGNER. It was something like that, Mr. Fogarty. I was reading from a table which I do not have before me right now. However, I would be glad to supply that information for the record if you would like to have a brief statement on it.

Mr. FOGARTY. This map does not portray to me a very fair picture of the distribution of the results of this research. It causes me to

wonder why a State like Montana is not doing anything, or that the State of Nevada is not doing anything. They are located as far away as the State of Utah from your TVA area.

Mr. WAGNER. Would you like me to supply a brief statement on that for the record?

Mr. FOGARTY. I think you would have to, because this does not look good to me.

Mr. RABAUT. Without objection, you may supply a statement for the record, setting forth what is done with this program in relation to this map.

Mr. WAGNER. You desire a statement to indicate why some States have a more intensive program than others?

Mr. RABAUT. We would like to have a statement setting forth the percentage of the division of product, and how it is divided.

(The statement requested follows:)

Thirteen States have never participated in the farm test-demonstration program. In the earlier years, some States had no interest in fertilizer or in the whole-farm approach to fertilizer use. In some areas, especially in the West, arable soil is of high native fertility. In such regions there is little incentive to participate in farm test-demonstrations. The farm test-demonstration program is cooperative. If there is insufficient interest in it at State and local levels, TVA does not promote it alone. Since 1947, limitations on funds have restricted extension of the program to new States.

Fourteen States that have participated in the program are now inactive. They have become inactive for various reasons, among them:

(*a*) Discontinuation of contract payments by TVA for land-grant college personnel in nonvalley States.

(*b*) Virtual removal of concentrated superphosphate from the program as tests and demonstrations were concluded and commitments to farmers filled. Calcium metaphosphate now being used in the program is not widely accepted as a source of phosphate on calcareous soils in the Great Plains and Rocky Mountain States.

(*c*) Limitation on funds did not permit continuation in the program of enough farms for an acceptable and efficient program in all States. This reduction in the number of farms also increased the difficulty in shipping fertilizer to them.

(*d*) Lack of response from fertilizer use and decrease in farm income because of extreme drought conditions, particularly in New Mexico.

(*e*) Loss of program supervisor in Texas because of a temporary decrease in Federal extension funds for that State.

Major fertilizers distributed for test-demonstration—Fiscal year 1954

[Tons]

	Concentrated superphosphate	Calcium metaphosphate	Fused tricalcium phosphate		Concentrated superphosphate	Calcium metaphosphate	Fused tricalcium phosphate
Alabama		378	1,848	New York			
Arkansas		13		North Carolina		468	612
Colorado		101		North Dakota			
Georgia		205	843	Ohio		94	
Idaho				Oklahoma		162	
Illinois		260	56	Oregon			
Indiana		115	75	South Carolina		325	
Iowa		38		South Dakota	108		
Kansas		66		Tennessee		274	6,247
Kentucky		266	1,455	Texas			
Louisiana				Utah	15	39	
Maryland				Vermont			
Michigan				Virginia		502	
Minnesota				Washington		101	
Mississippi		183	294	West Virginia			
Missouri		78		Wisconsin		27	
Nebraska	23						
New Hampshire				Total	146	3,695	11,430
New Mexico							

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Mr. FOGARTY. I thought at one time that the distance from the TVA area meant something, but it does not work that way, because the State of Washington is taking advantage of some of these programs, while the State of Nevada is not.

The State of Washington is farther away than the State of Nevada.

Mr. PHILLIPS. Mr. Chairman, I presume the answer to Mr. Fogarty's statement from the TVA would include a statement of policy of the TVA regarding the distribution of this material, say, 10 or 12 or 14 years ago, at the time the large program of demonstration was centered in the TVA valley.

Mr. FOGARTY. Are you manufacturing any fertilizer which is not being used in relation to these various programs throughout the land-grant colleges, and these test-demonstration counties?

Are you manufacturing any at all for outright sale for any purpose other than that connected with some form of research?

Mr. WAGNER. Research or education?

Mr. FOGARTY. Yes, sir.

Mr. WAGNER. No, sir; we are not.

Mr. FOGARTY. The only fertilizer which you are manufacturing today is being used in connection with research and educational matters?

Mr. WAGNER. Yes, sir.

Mr. JENSEN. Mr. Chairman, I think it would be well, in connection with the request which Congressman Fogarty made, for the TVA authorities to explain why the Tennessee Valley is entitled to about three-fifths of all the test farms contribution insofar as fertilizer is concerned.

TEST-DEMONSTRATION PROGRAM

Mr. RABAUT. All right; put a statement in the record as to that, and also place a statement in the record as to how these test farms came about, whether they came about as a result of requests, or how they have come about.

Would that take care of your inquiry also, Mr. Phillips?

Mr. PHILLIPS. Yes, sir.

(The information requested follows:)

Test-demonstration farms have been concentrated in the Tennessee Valley because of TVA's special interest in and responsibility for agricultural development and watershed protection in this area. Because of the great diversity of soils in the valley States the area presents a compact region for tests and demonstrations under a wide variety of conditions. There is a great need for and response to phosphates in the valley. The beneficial effects of the program are needed here and results can be readily obtained. The valley land-grant colleges have displayed a wide and continuing interest in the program.

Since 1935, test-demonstration farms have been a major means of introducing experimental fertilizers to farmers, obtaining information on characteristics of the fertilizers under practical farm conditions, and of promoting the effective use of fertilizers in improved farming systems throughout the country.

The activities are supervised by the State and local agricultural extension services and become an important part of their programs for agricultural improvement. Farms are selected, with participation by county and community groups, to represent important agricultural situations such as soils, sizes of farms, and types of farming. The spread of demonstrated practices is promoted through meetings, farm tours, and various forms of publicity. The keeping of adequate farm records is encouraged, and this provides material for studies of farm organization, management, and income.

Mr. MAGNUSON. I am wondering, from looking at this map, if by any chance at all that it is less practical to test these fertilizers in the more arid areas of the country than it is in the more moist climates?

Dr. CURTIS. Yes. Some of the fertilizers which we produce are not suitable for the West at all, but in regard to this general matter of how many test-farm demonstrations we have, that is dependent primarily upon local initiative.

Mr. PHILLIPS. I will take an exception to that, and so will Mr. Jensen.

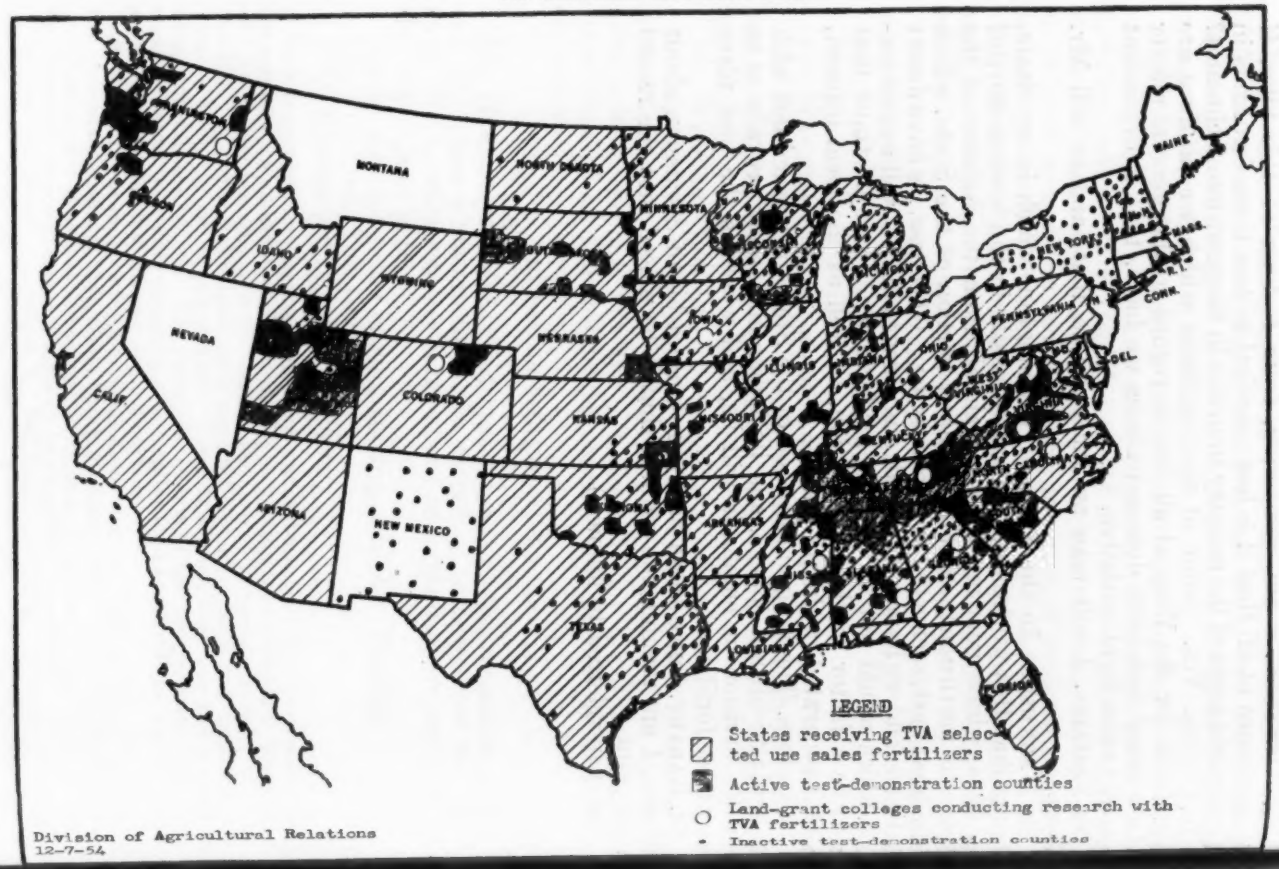
Mr. MAGNUSON. In the State of Washington, which is my State, I notice that this work is concentrated mostly in the western part of the State, which gets much more rainfall than the balance of the State, and particularly that the central portion of the State, which is the driest part, seems to have no activity. Of course, we have desert land there, and we have cattle land, and forage land, as well as pasture-land, which would not be suitable for fertilizer. I would think that might be a factor in this distribution, as well as the local interest, which is generated in the program.

Dr. CURTIS. The program in each of the States is worked out with the local agricultural college, and its judgment largely prevails as to what the division or emphasis will be, and where is the best place to try these fertilizers.

Mr. RABAUT. Since there has been quite a bit of discussion about this map, I am making the request that it be placed into the record at this point.

(The map referred to follows:)

TVA FERTILIZER ACTIVITIES 1954



Resource Development

Mr. Rabaut. We now come to consideration of the request for resource development.

At this point in the record we will insert page 73 of the justifications.

(The page referred to follows:)

Schedule B–4.—*Resource development (for fiscal years ending June 30, 1954, 1955, and 1956)*

	1954 actual	1955 estimate	1956 estimate
Income (incidental income)	$21,550	$7,000	$8,000
Expenses:			
Agricultural resource development	119,082	93,000	93,000
Forest resource development	481,481	431,000	471,000
Tributary watershed development	320,902	310,000	336,000
Topographic mapping	69,547	33,000	100,000
Government and economics staff studies	103,130		
Total direct expenses:			
Appropriated funds	547,071	347,000	400,000
Corporate funds	547,071	520,000	600,000
Total	1,094,142	867,000	1,000,000
Distribution of administrative and general expenses (schedule B–5)	125,474	104,000	104,000
Total expenses before depreciation	1,219,616	971,000	1,104,000
Depreciation on general facilities	192,545	10,000	10,000
Total expenses	1,412,161	981,000	1,114,000
Net expense of resource development	1,390,611	974,000	1,106,000

Note.—In accord with the Second Independent Offices Appropriation Act, 1954, resource development was financed in fiscal year 1954 from appropriated and corporate funds in equal amounts. The 1955 estimates of 40 percent from appropriated funds and 60 percent from corporate funds are based on the method of financing used in the Independent Offices Appropriation Act, 1955. The 1956 estimates are based on the same method of financing as used in 1955.

A Statement on Resource Development

The primary programs of the TVA as described in the TVA Act of 1933 as amended provide for the development of the river for the benefits of navigation, flood control, and power, and for research in and development of chemical products as fertilizer or for the national defense. Beyond these primary programs are significant areas of resource development related to them and not covered by them which require attention in order to achieve the integrated development of all the physical resources of the valley. These activities establish an essential link between engineering works and the people for whom they were built. They provide a meeting ground for Federal and State programs of resource development. They stimulate local participation in conservation activities and the assumption by State and local groups of increasing responsibility for resource development.

The development of agricultural resources involves more than testing and demonstrating new and improved fertilizers and stimulating the spread of better farm and home practices. There are problems to be met through economic analyses, through a precise knowledge of the region's soils, and through studies of existing conditions which have a bearing on the wise use of agricultural resources.

One of the great resources of the valley is its forests, to which the act directs TVA to devote attention. These forests are a significant feature in watershed protection, but TVA's river development work taken alone does not extend to forest conservation and utilization.

The problems of small tributary watersheds are not everywhere alike, nor are they miniatures of the problems involved in developing major rivers. Beyond its river-control activities, TVA cooperates with State and local agencies in seeking solutions to the problems of small watersheds and in demonstrating techniques for developing these tributary areas.

There are certain data collection activities that benefit many programs but are not strictly a part of any one of them. Topographic mapping is an example of such work. In cooperation with the United States Geological Survey, TVA provides topographic maps for its own use and for the use of the region.

For budget planning purposes, TVA includes related development activities such as agricultural and forest resource development, tributary watershed development, and topographic mapping in the category "Resource development." A characteristic feature of these activities is that they involve extensive cooperation with other agencies, both public and private. TVA's principal role is to stimulate research, to aid in identifying and solving resource development problems, and to aid in demonstrating practical applications of research findings.

A second characteristic is the changing nature of these activities, either as to content or sponsorship. When TVA was established, State and local resource development agencies were few and weak. TVA has stimulated their growth and has constantly encouraged them to assume increasing responsibilities for leadership in regional development. As other agencies take over a part or all of a project that TVA may have initiated or in which it may have been a leading participant, the Federal partner withdraws. There are many examples of this shift of responsibility during the past 21 years.

TVA is constantly alert to opportunities for Federal-State cooperation in resource development projects. Its contribution to regional development is small in terms of dollars, is great in the effect it has upon State and local agencies. A part of TVA's resource development program is the identification of areas in which State and local agencies can make greater contributions, encouragement of more aggressive programs at State and local levels, and ultimate shifting of the position of leadership. This is done as an orderly process and as an integral part of an action program.

During fiscal year 1954 actual obligations for resource development were $1,094,142. The 1955 estimate is $867,000. The estimate for 1956 is $1 million. Details of the activities covered by this estimate are given in the sections which follow.

The Independent Offices Appropriation Act of 1954 provided for financing related resource development activities equally from appropriated funds and corporate funds. Under the Appropriation Act for 1955, 40 percent of the program costs will be financed from appropriated funds and 60 percent from corporate funds. The same method of financing as that followed in 1955 is proposed for 1956.

AGRICULTURAL RESOURCE DEVELOPMENT ($93,000)

The Tennessee Valley is important as an agricultural region. There are over 23 million acres of its land in its 300,000 farms. More than 1½ million of its people live in rural areas. The concern of the Congress for developing the valley's agricultural resources in the overall development of the region is made clear throughout the TVA Act of 1933. In the title to the act, Congress expressly declared that one purpose of the law was "to provide for the agricultural * * * development of said valley * * *." This intent is more clearly spelled out in sections 1, 5, 22, and 23.

The main approach to the improvement of agriculture in the Tennessee Valley is through the fertilizer and munitions-development program (see pp. 59–72). This program emphasizes production of new and improved fertilizers and their use in improved agricultural practices. The development of land resources must go beyond the use of mineral fertilizers and land-use adjustments. For this reason, TVA engages in several activities dealing with other aspects of agricultural resource development. The nature and extent of these activities depend upon current needs of valley agriculture. During the years TVA has begun and concluded some very profitable research activities, such as food-processing research and agricultural engineering research and development. Now that other agencies, both public and private, are better equipped to provide for local needs in these fields, TVA has devoted its attention to other agricultural resource-development problems which are described in the following sections.

These activities are in the main cooperative projects with State agencies, designed to encourage a fuller development and use of agricultural resources consistent with sound conservation practices. The changing character of agriculture in the valley and the rapid industrialization of the area sharply emphasize the need for an integrated program. The projects are selected on the basis of current program needs. In the case of joint undertakings, TVA and the other cooperators determine the nature and scope of the project. The results are made available

through demonstrations, conferences, and published reports to interested State and local conservation agencies, development groups, and individuals.

During fiscal year 1954 actual expense of these activities was $119,082. The 1955 estimate is $93,000. The estimate for fiscal year 1956 is likewise $93,000.

Economic analyses of valley agriculture—$36,000

In order to plan an effective program of agricultural resource development, the TVA needs current data on the status of the resource and trends in its use, and a basic knowledge of the conditions that have retarded or stimulated it. To help in the identification of the problems and opportunities of valley agriculture, to aid in the development of solutions to these problems and the formulation of corrective action programs, and to provide bases upon which program results can be evaluated, TVA conducts limited agricultural economic analyses. Data available from other Federal agencies and from State and local sources provide the basis for these analyses. In these studies, data on such factors as agricultural production, family income, farm employment, market development, community improvement, and the effects of part-time farming are analyzed and interpreted from the aspect of valley rural economy.

Some of these analyses are continuing and are concerned with keeping specific economic indicators in a current state for day-to-day planning, management, and program evaluation uses. In addition, answers are sought to specific questions such as those relating to significant changes in valley agriculture over a long period of time and the effects of these changes, the future of valley agriculture, and the steps that should be taken locally to assure the full and wise development of valley agriculture. The answers obtained to these questions and the data currently available on agricultural resource status and trends are useful to TVA and other agencies in planning action programs.

The titles of three recent reports prepared under a project now in progress show something of the nature of the economic analyses of valley agriculture covered by this budget estimate. These reports are Comparative Data on Farm Income and Employment, 1929–51; Differentials in Farm Income and Employment in the Tennessee Valley Region Counties; and The Changing Agriculture of the Tennessee Valley. The third report, to use it as an example, gives a clear picture of some of the things that have taken place in valley agriculture and points up some problems of agricultural development that demand early attention. Among other things, this analysis shows that off-farm employment is a characteristic feature of the rural economy of the Tennessee Valley. In 1950 one-fourth of the valley farmers had substantial off-farm employment. Over one-third of the farm families received more income from nonfarm sources than from their farms. Beyond this, almost one-half the valley farms are either part-time or purely residential. Whether this is good or bad from the point of resource use and conservation is yet to be discovered. A research project directed toward appraising the impact of nonfarm work and identifying the steps to be taken to remedy any adverse effects of the practice will be initiated in 1955. This activity is described (see pp. 83–84) under the heading "Part-time farming studies." Similarly, other programs or shifts in program emphasis have been determined on the basis of background data on the region's agricultural economy.

During fiscal year 1956, background studies will be continued, with emphasis on an analysis of the 1955 census of agriculture for the valley States, research on the causes of low farm income in the area and the barriers to the flow of capital to agriculture, and further study of farm size and farm population.

Soil survey, $5,000

Proper use of mineral fertilizers in sound farm systems, the development of good agricultural practices for local conditions, and the appraisal of the results of land-use adjustments involve a precise knowledge of local soil data, much of which can be obtained only through soil surveys. A soil survey is an inventory of soil resources of an area, in which the soils are identified and classified according to their inherent physical and chemical characteristics and such natural features as stoniness, slope, geographical position, and drainage. The survey also shows extent of erosion, degree of plant nutrient depletion, and current productive capacity and potentialities. For public use, a report is prepared for each area surveyed, usually on a county basis. This report contains a detailed map, a description of each soil type, and a discussion of the relationship of the soils covered to agriculture.

When TVA was organized, little information was available on Tennessee Valley soils. Soil-survey work is a national project of the United States Department of Agriculture. In order to intensify the activity in the valley, TVA, the

USDA, and the agricultural experiment stations of the valley States began a cooperative survey of the soils of the greater part of the region. The valley portions of North Carolina, Virginia, and Mississippi were mapped under this cooperative program, and mapping in the other four valley States was far advanced. TVA suspended its active participation in field mapping work early in calendar year 1954. USDA and the States are continuing the work.

Soil survey data are useful in research in and demonstration of the best use of agricultural resources. These surveys serve as a basis for the study of fertility levels and the determination of fertilizer requirements. They are helpful in evaluating the productive capacity of individual farms and the suitability of the land for various types of farming. They aid in choosing the location of experimental farms and plots and in selecting farms for testing and demonstrating TVA fertilizers. They provide a basis for applying test-demonstration results obtained in one locality to the same soils on farms in other localities.

TVA is now cooperating with the University of Tennessee on a project aimed at encouraging the wider use of soil-survey data. Studies will be made of the interpretation and utilization of this type of information in individual farm planning. This work, initiated in fiscal year 1955, will be continued during 1956. It is expected that it will permit the region to derive even greater benefit from the present investment in soil-survey data.

Research on forage crops and animal industry, $10,000

Many of the farms of the Tennessee Valley are small and the most of them are readily erodible. This is especially true in case of farms in the mountainous section of the valley. There are over 32,000 farms in the mountains of western North Carolina and almost 12,000 in the hill country of north Georgia. An almost universal problem in such an area is to find ways whereby a farmer can make a living without destroying his soil resource in the process. The TVA has a dual interest in the problem. It is interested in farm income and it is especially concerned with what happens to the farmer's land.

It is generally recognized that pastures and meadows are essential components of conservation agriculture. A significant aspect of TVA's fertilizer development program has been its emphasis on the use of chemical fertilizers on cover crops. It is likewise generally accepted that pastures and other forage crops supply food for cattle, sheep, and goats more cheaply than other sources. This suggests that animal industry provides a solution to deriving the best income from many farms consistent with sound conservation practices.

In cooperation with the agricultural experiment stations of North Carolina, Georgia, and Alabama, TVA is doing research on forage crops and animal industry in an effort to determine superior forage crops and feed production systems for the region. Most of the forage crops now grown in the Tennessee Valley have been introduced from other regions. Most of the research on them has been done elsewhere under quite different conditions. This requires that some regional research be done if the best forage crops for that area are to be identified.

Forage research involves the determination of the reasons why some crops are more palatable, more digestible, and more nutritious than others. Applied research relates to questions of such immediate importance as what pasture crop is best for milk production and at what age can dairy calves obtain all their needed food from pastures.

The cooperating institutions pay the greater part of the cost of these studies of forage crops and animal industry. Results of the studies are made available to farmers through local channels of communication as soon as they are proved.

Studies of the management of land for the most efficient production of animal feed will be concluded during fiscal year 1955. A current study of the chemical factors affecting the nutritional quality of forage crops and the correlation of animal response to the various constituents of forage plant will be continued during 1956.

Agricultural development in problem areas, $22,000

Within a rapidly developing region some local areas fail to keep pace with the improving agricultural, forestry, and general economic conditions of other localities. Catoosa County, Ga., is such an area. The county's agricultural development has been retarded, partly because of poor soil, partly because of poor agricultural practices. Development of related resources has likewise been slow, although several agencies are available to assist in the development of the area.

Late in calendar year 1951 local leaders in the county asked TVA to cooperate in a local development program involving several Federal, State, and local agencies. TVA agreed to assist in the project because of the opportunity it offered

to support local initiative in a much needed conservation program. TVA's primary contributions are furnishing technical assistance, reimbursing the University of Georgia for the services of an assistant county agent, and furnishing some fertilizer for an increased number of test-demonstration farms and seedlings for reforestation.

The primary tool for development in Catoosa County is a local development board, composed of county officials, representatives of agricultural agencies, and representatives of various farm groups and civic bodies. This sponsoring group works through a smaller planning committee and seven action committees.

The most significant result of the Catoosa County development, now in its third year, has been the creation of a local organization, the development of an integrated program, and the stimulation of local interest. During 1954 at least 1 educational or demonstrational program was conducted by 1 or more of the action committees. They attracted a large number of participants.

During 1956 the same approach to agricultural development in Catoosa County will be continued. TVA will supply 127 tons of calcium-metaphosphate fertilizer on a partial-payment plan to 65 test-demonstration farms and will pay the expenses of the assistant county agent who works with test-demonstration farmers. Approximately 400,000 tree seedlings will be distributed for planting on private lands.

Part-time farming studies, $20,000

Economic analyses of valley agriculture show that the trend to part-time farming is one of the significant developments of the past 20 years (see pp. 78–79). This trend is more pronounced in the Tennessee Valley than in the area immediately adjacent to the valley. The 1940 census reported that 19.4 percent of the valley farmers worked off the farm for 100 days or more. By 1950 this percentage was 25.6. These figures indicate the growing importance of combining farm and nonfarm work to make up the family income.

What is happening in the valley is a logical consequence of the rapid industrialization of the area, which creates new markets for local labor and new sources of income for low-income families. More than 140,000 valley farms are operated by part-time farmers or are classified as residence farms. This is about 23,000 more than were so classified 10 years ago. It is probable that these 140,000 farms contain a great deal of land that is being put to no productive use. It is also likely that soil resources are being lost through the virtual abandonment of thousands of acres of land that was once cultivated.

TVA, the University of North Carolina, and the University of Kentucky will begin cooperative research projects on part-time farming in the respective States in fiscal year 1955, which will be continued in 1956. The institutions will do the fieldwork and some evaluation studies, with partial reimbursement of cost by TVA. TVA will give technical assistance and will evaluate research findings. The studies will be carried out in counties with a high proportion of part-time farmers and rural industrial workers. The objective of the study is to identify the problems associated with part-time farming and to study the educational programs needed to help part-time farmers make the best use of their land. Ways will be sought to assist in the reorganization of rural communities that have been disorganized by the impact of industrialization. The cooperation of employers, organized labor, and local groups will be solicited.

FOREST RESOURCE DEVELOPMENT ($471,000)

Forests constitute one of the major basic resources of the Tennessee Valley. They cover 14 million acres, 54 percent of its area. One objective of the Tennessee Valley Authority Act of 1933 is the development of the region's forests. In accord with the intent of the act, TVA's interest in the woodlands of the valley centers around the twin needs of protecting the Tennessee watershed and of using the forest resource to the best economic advantage.

The public interest and the public investment in an extensive system of dams and reservoirs for water control and utilization in the Tennessee Valley require the conservation and development of forests. This protective forest cover retards excessive flood runoff, aids in the retention of ground water for stabilized streamflow, and helps to control soil erosion and reservoir siltation. This interest in forests as agents in soil and water conservation is only one side of the picture. The other side shows the forests as a significant asset supporting a great segment of the region's economy. Because of its concern with the orderly economic development of the region, TVA is vitally interested in the wise utilization of the

forest resource as well as in its conservation. It recognizes that sound economic development of the forests is consistent with the development of forests for watershed protection.

The forest resource of the Tennessee Valley provides one of its largest single demands for labor in the region. One in every five industrial wage earners in the valley works in the wood-processing or wood-using industry. The valley's forest business is valued at $350 million a year, a figure that can be increased to $1 billion a year under better management.

The national importance of the forests of the Tennessee Valley lies in the abundance and quality of the hardwood stands within close reach of major forest industry centers. They supply much of the oak flooring for home construction and provide hardwood veneers and dimension stock for the expanding furniture industry. Oak, yellow poplar, and gum are of good quality, and hickory for striking-tool handles is abundant. The paper mills of the valley lead in hardwood for semichemical pulping. Several tannic acid extract plants provide tannin for the leather industry and corrugated board for containers. Many smaller industries provide specialized products throughout the Nation, such as dogwood shuttles, custom furniture, etc.

Eighty-two percent of the forest resource of the Tennessee Valley belongs to some 245,000 private landowners. Processing the timber begins with some 4,000 sawmill and timber operators. Prior to 1933 these owners and operators had no clear idea of the requirements of sound forest management or of their individual and collective responsibility for conserving and utilizing a resource of such vital importance to them, to the region, and to the Nation. Despite the obvious conclusion that the forest owners and timber operators are together the key to both conservation and development, they were not included in pre-1933 conservation programs. At about the time TVA began its forest resource development program, the major Federal forestry project in the Tennessee Valley was the acquisition of forest land by the Federal Government and its management by the United States Forest Service. Reforestation was almost unknown; 1.9 million acres of seriously eroding or idle land was in need of reforestation in 1933. Less than half the forest land had any organized fire protection, and that inadequate. Over 2½ percent of the protected land burned each year and from 10 to 20 percent of the unprotected land was annually burned. So far as can be learned, none of the privately-owned forest land in the valley was under sustained-yield management in 1933. The timber operators did not know how best to utilize the second-growth timber stands in the valley as their practices were largely those developed in exploiting virgin forests that had largely disappeared. The value of the forest business was less than $100 million a year.

The basic premise of TVA's forest resource development program is that primary responsibility lies with the forest-land owners and the timber operators of the region. They own and use the resource; they benefit directly and materially from its prudent management. Until they recognize and accept their responsibilities, forest conservation and development will be handicapped.

It is recognized that there are area responsibilities belonging to the States. Protection of the forests from fires and from disease and insect infestations, reforestation, and broad educational programs, including the promotion of better management, are beyond the abilities and responsibilities of individuals. The valley States are assuming increasing responsibilities for these functions. The TVA's function in forest resource development is to assist State and local agencies—and through them individuals and firms—to identify their responsibilities and opportunities and to help integrate the efforts of individual, State, and local enterprise. TVA conducts research, obtains essential facts, develops and proposes new ideas, aids in demonstrating improved practices, and stimulates greater State and private participation. TVA helps the States meet their responsibilities in the fields of reforestation, fire protection, and forest development.

This approach has resulted in a great improvement in the forest resource of the region. The combined efforts of individuals, State and local agencies, and TVA have reversed the earlier trends of forest exploitation, followed by eventual Federal ownership. The individual activities making up this development program are described below. Actual expenditures for forest resource development in 1954 were $481,481. The estimate for fiscal year 1955 is $431,000. The 1956 figure is $471,000.

Analysis of valley forests, $75,000

The forest resource development program of the TVA and of the State and local agencies of the valley requires the collection and analysis of valleywide and local data on the extent, nature, growth, use, and condition of the forest resource and

the type of management it is receiving. This is essential to the best utilization of the forest product and to the proper management of forests for watershed protection. Except as TVA has provided it, precise local information of this character is not available. The United States Forest Service undertakes to present very generalized data for States and broad regions in its nationwide forest servey program. This information is not precise enough for industry and agency use in local situations. TVA assists the United States Forest Service in its broad survey program and to the fullest extent possible utilizes Forest Service data in developing localized information.

TVA conducts a continuous inventory of the forest resource of the valley. This survey is made by counties with the objective of covering the entire valley once every 10 years. Two States have assisted. During 1954 a major pulpwood buyer in the valley assisted in conducting the inventory in western North Carolina. Data obtained through these surveys are of great value both to forest industires and to conservation agencies. Decisions on plant location and type of product depend to a great degree on the availability of reliable data on timber resources. For example, a large newsprint manufacturer now in production in the valley decided to locate here because forest-inventory data showed the forest resource could supply the needed pulpwood. Explorations making use of TVA resource data are now in progress to determine the location of another large pulp mill. Opportunities for fuller utilization of specific forest types, such as hickory and other hardwoods and cedar, are disclosed by forest-resource inventories. Conservation agencies can take this localized information and use it in planning educational programs, demonstrations, and promotional activities aimed at areas of acute problems or unusual opportunities. During 1956 the forest resources of eight valley counties will be inventoried, about the same number that were surveyed in 1954 and 1955.

Background studies of the valley's forest resource show that only 12 percent of the privately owned timberland is satisfactorily managed and that only 4.5 percent of the forest-land owners are satisfactory managers. This indicates a need for more attention to management training and to the development of devices to accelerate the adoption of good management practices. With the facts obtained through analyses of valley forests, TVA and cooperating agencies—State, local, and industrial—will concentrate on stimulating greater interest in sound forest management and on finding a solution to the problem of managing the many small forest holdings of the region. Action programs of this character, originating in basic studies such as those described, are undertaken under other forest resource development programs described in the following sections.

TVA has encouraged and has assisted in the establishment of consulting foresters in the valley to provide services needed by forest-land owners. An analysis of the use to which consulting foresters have been employed in the valley will be made, with emphasis on the types of services provided, the type of landowners who employ them, and the relationship of private consulting foresters to public agency foresters. On the basis of this analysis, recommendations will be made on the way that TVA participation can be made most effective in relationship to the work of private foresters and on the way that public advisory services can be reduced in favor of private consulting services.

Assistance in sustained forest productivity, $129,000

If the forest-land owner is to make the best use of his holdings, both for financial return and for soil and water conservation, he must have information and technical assistance in applying sound management practices to individual holdings. The analyses of valley forests described above have shown this need clearly. To help keep the forest productive, TVA collects and maintains up-to-date information on the forest-products industry and its requirements, conducts investigations aimed at increasing forest production, and through demonstrations illustrates practical methods of scientific forest management. Projects are chosen on the basis of current needs and are cooperative undertakings, involving individual owners, the wood-using industry, and State and local forestry agencies as well as TVA. Close cooperation is maintained with State planning commissions and State conservation departments.

Three problems of forest management are particularly important at this time. Annual hardwood timber growth is in excess of the amount harvested and the quality of the remaining hardwood is decreasing because high-grade trees are being removed and low-grade trees are left to grow for future use. This trend should be reversed. The second problem likewise relates to growth and harvest. Pine sawtimber in the Tennessee Valley is being cut faster than it is growing.

This imbalance between growth and drain jeopardizes the permanence of industries depending upon a supply of pine sawtimber. Solutions to the problem lie in the increased growth of pine through slowing the encroachment of hardwoods in pine areas and converting low-grade hardwood to high-grade stands or to pine production. The third area problem is the development of procedures for the better management of young pine plantations and natural stands. Some 250,000 acres of land in the valley have been reforested during the past 20 years, largely in pine. Many of these pine plantings are now reaching usable size and must be brought under a system of management devised for them if optimum return from them is to be achieved.

The economic importance of these pine plantings to the landowner, to say nothing of their value in soil and water conservation, can be simply stated. The product of the first thinning of 200,000 acres of pine planted in the valley, performed when the stands are 15 years old, will be worth $3,600,000 at present prices for pulpwood. The residual stand will have a value of $6 million which if well managed and protected for the succeeding 30 years will be worth $80 million as sawtimber. This is but a part of the vast resource, privately owned, for which sound management is sought.

Sound management involves sustained production. The best opportunities for accelerating forest development lie in sustained-yield management of the privately owned woodlands of the valley. There are many ways of doing this. One way is to encourage more owners to use the services of consulting and industry foresters to a greater extent. Wood-using industries can be encouraged to acquire more forest land and to manage it for more and better production. Industries, including sawmill operators, can be encouraged to cut the trees they buy with concern for the future of the resource upon which they depend. The widespread adoption of landowner-forester contracts through which forest lands may be systematically developed with a minimum current financial outlay by the owner can be encouraged. Economic management of small holdings can be facilitated through the establishment of mutual associations of the owners in the creation of operable forest units.

Essentially this is an educational process carried out through two types of activity, investigations to determine the facts and demonstrations to bring improved practices to the attention of the landowners. To date, 27 cooperative demonstrations involving a half million acres of forest land in large tracts have been established. More than 250 farm woodland management demonstrations have been started. Sixty-nine timber harvesting demonstrations have been held with an attendance of about 5,700 persons.

The estimate for 1956 provides for the continuation of studies of pine management and stand conversion and hardwood improvement studies now in progress. It will enable TVA to participate in 18 cooperative timber harvesting demonstrations, 2 cull tree removal and underplanting demonstrations, and 2 tree-grade demonstrations. TVA foresters will work with owners and private foresters to encourage the wider use of consulting foresters, possibly through long-term management contracts. Two forest landowner mutuals will be established withsome TVA staff assistance. Continued guidance and assistance will be given in the establishment and maintenance of forest-management demonstrations.

Assistance in forest protection, $35,000

Before forest lands can become fully productive they must have adequate protection from such destructive agents as fire, insects, and disease, and from destructive practices such as woodland grazing and poor logging methods.

Forest-fire control is a major activity in the protection of the valley's forests. It is a State responsibility. The TVA now assists the States in fire-protection programs to a limited extent in specific problem areas and on special projects, such as the one in North Carolina described on page 93.

In 1933 only half of the woodland of the valley had any kind of protection, and it inadequate. Woodland ownership and development under such conditions was not a good business risk. In 1937 and 1938 TVA made the first systematic survey of the fire situation and needs of the region. Having determined the facts, TVA undertook cooperative projects to stimulate fire-protection work and to arouse an interest in fire-prevention activities.

One hundred and one of the one hundred and twenty-five counties of the Tennessee Valley now contribute to the financial support of the fire-protection programs of their respective States. The quality of protection has been steadily improving and the average annual burn has been decreasing. More attention needs to be devoted to fire prevention as well as to fire suppression.

Twenty years ago cattle grazed freely in the most heavily forested counties of the valley, doing incalculable damage to the woods. The educational work of TVA and other agencies brought about a steady diminution of the open range area of the valley. Recent passage of a fence law in Wise County, Va., closed one of the few remaining areas of open range in the valley. However, several thousand individual owners still need to be informed of the ill effects of woodland grazing to their individual interests and to the public interest.

Logging in the hills and mountains of the Tennessee Valley is too often followed by erosion and consequent damage to the watershed because of poor design and location of roads and poor drainage and skidding methods. In cooperation with other agencies TVA has conducted demonstrations of logging methods that are not destructive of watershed values. One of the first watershed protective logging demonstrations in the area was on the municipal watershed of Waynesville, N. C. The principles demonstrated there are finding application elsewhere.

The TVA's role in forest protection is to stimulate State and local agencies, woodland owners, and timber operators to eliminate or reduce major forestry risks. This it does through cooperative research and demonstration. The small estimate for fiscal year 1956 will provide for investigating the possibilities of a three-State fire-prevention program in the area where Alabama, Georgia, and Tennessee join. Assistance will be given in beginning local fire warden training schools in Virginia and Tennessee. A watershed protection logging demonstration will be conducted. Arrangements will be made for more intensive use of seven grazing demonstration plots already established. State divisions of forestry will be given assistance in extending fire protection, in using key fire danger stations, and, in cooperation with other Federal agencies, in making surveys of insect and disease outbreaks.

In cooperation with the State forester of North Carolina, TVA is making a study in western North Carolina to develop and test a method for determining the point of diminishing returns on probable expenditures for fire control. This project, started late in fiscal 1954, will be continued in 1955 and 1956.

Reforestation, $119,000

In 1934 conservationists estimated that there were 1.9 million acres of seriously eroding or idle land in the Tennessee Valley in need of reforestation. Despite the need for reclaiming this wasting land, there was no great interest in reforestation and adequate forest nurseries did not exist. Up to that time only a thousand acres of land had been reforested in the entire valley. There were many reasons for this. The most immediate reasons were the absence of an effective promotional program of tree planting and an adequate supply of seedlings. This lack in turn could be traced to the weakness of local conservation agencies due to public apathy. This failure to build up the forest resource went hand in hand with the failure to protect the existing resource from fire and other destructive agents.

By the act of Congress creating it, TVA was directed to develop the best methods for reforestation and to aid in the control of erosion in the Tennessee Valley. One of its first major forestry activities was the establishment of nurseries to produce seedlings for planting on its reservoir lands, on other public lands, and on private lands.

Reforestation is a cooperative enterprise in the valley. TVA makes surveys to determine the broad needs for planting, provides leadership and program coordination, and evaluates results. A TVA nursery produces a part of the seedlings needed. State and county conservation agencies, civic bodies, banks, and forest products industries cooperate in promotional work and in seedling distribution. Planting and protecting the seedlings is the landowner's job. Since the reforestation program in the valley began, 35,000 landowners have planted trees on 224,000 acres of privately owned land. Under present budget restrictions, no more than 50,000 seedlings, enough to reforest about 50 acres, will be supplied to any one landowner.

The value of 224,000 acres of reforested land is obvious. In the first place, 200,000 acres of the most seriously eroded and idle land in the valley has been stabilized and changed from a liability to an asset, both in terms of watershed protection values and in terms of dollars. Fifteen-year-old plantations are already producing an economic return. TVA recently sold as pulpwood the thinnings from 8,000 acres of reservoir land planted some 15 years ago for about $148,000 more than the estimated cost of the reforestation program during 1956. Applying this value to private lands, there is $3,600,000 worth of pulpwood from thinnings that is now ready for cutting or that will be as each stand reaches 15 years old. That is more than the cost of TVA's reforestation work for the past

20 years. The residual stands will, when 45 years old, be worth at least $80 million at today's prices for sawlogs.

TVA seedlings production is limited to the output of one nursery, a second nursery having been closed during fiscal year 1954 because of limitation on funds. During 1956 the Clinton Forest Nursery will complete production of 17 million seedlings, of which 9 million will be used in valleywide reforestation, 2 million on tributary watershed projects, and 6 million will be transferred at cost to other agencies. Production will be started on 18 million seedlings, including 12 million for valley reforestation and 6 million for transfer to other agencies. In addition, limited work will be done on erosion control demonstrations and on the continuation of forest tree crop research, a long-term project.

Assistance in timber processing and utilization, $113,000

The sawmill industry in the Tennessee Valley is characterized by the number of small independent portable mills, some 4,000 of them. Together they produce about 900 million board feet of lumber a year, 90 percent of the valley total. To a large extent they use methods and types of equipment that have changed little in 25 years. Few of these operators are equipped by training or experience to make the most out of harvesting and using second-growth timber stands in a mixed pine and hardwoods region. Few of them understand the relation of their present timber cutting practices to the future of the resource on which they depend, yet these operators have almost complete control over how timber is harvested.

For many years various public and private groups have tried to improve small sawmill operations. The problem has been to assemble the scattered independent sawmillers at central places to teach them new or improved techniques. Early results were disappointing.

TVA initiated two means of getting small timber operators to take part in forestry programs. One is the timber harvesting demonstration, which brings the sawmill operator and the landowner together. The other is the sawmill operators conference, which brings operators of sawmills, representatives of other forest products industries, and manufacturers of sawmill equipment together. These conferences have been very effective in the valley. Since they were begun in 1951, 27 sawmill conferences have been held, attended by 2,200 people, including representatives of about 800 small sawmills. While TVA continues to supply much of the research data presented at these conferences, the greater share of the work and cost of holding them is borne by State and local agencies and by the lumber industry.

These conferences are not discussions of the responsibilities of sawmill operators to protect and conserve forests. The approach to conservation and wise utilization is through the economics of sawmill operations and timber harvesting. Efforts are directed toward showing the sawmill operator how he can get more production from his mill and more money for his lumber through proper harvesting, sawing, and handling methods.

In addition to the conference approach, TVA makes printed reports available to help sawmill operators learn improved practices and gives technical advice and assistance in individual cases upon request. The objective is to help them make good managers for their own good, for the good of the industry, and for the good of the forest resource.

During 1956 investigative work will relate to the economics of pine logging and milling and to economic harvesting of various types of pine products such as sawtimber, poles, pulpwood, and posts. A study will be made of specific hardwood products, including chipboard, dimension stock, poles, and veneer. Wood preservation research conducted in cooperation with the Southern Wood Preservation Council will be continued.

Developmental work to be done in 1956 will include 9 sawmill conferences and 10 sawmill efficiency demonstrations. TVA will establish two demonstrations of sound timber harvesting practices. Assistance will be given to local planning commissions, development associations, and timber operator groups in analyzing forest industry development opportunities.

TRIBUTARY WATERSHED DEVELOPMENT, $336,000

The tributary watershed activities of TVA are designed to help direct the efforts of State and local agencies in a local area approach to balanced resource development for the Tennessee River Basin. Effective conservation, control, and use of water resources call for soil and water programs along small tributaries as well as for works on major streams. Special area programs represent a method of in-

creasing the effectiveness of basin-wide programs such as forestry, agriculture, water control, and electric power by achieving local area improvement under State leadership and responsibility.

TVA's tributary watershed program provides for basic investigations of soil and water behavior under test conditions. It also provides for exploration of broader developmental opportunities to be found in special watershed areas tributary to the Tennessee River. A most significant feature of the regional program is the growing recognition in the Tennessee Valley that upstream watershed programs under State leadership and direction can be geared to individual watershed needs and can be tied in to the total economic progress of the local community.

A number of small watersheds in the valley have been identified by TVA as having water problems which may retard local economic development. Studies have indicated that a great deal can be accomplished at relatively little cost if the States will take the lead in applying their efforts and those of local agencies in development programs in these areas. Through this process the related water and economic problems of small watersheds can be identified and alleviated with a minimum of Federal participation. The States are in strategic position to enlist and coordinate the many sources of outside help available to tributary watersheds, including the services of TVA and other Federal agencies. TVA's efforts in this field have been largely to study and demonstrate the results of a comprehensive approach to small watershed development in a few selected areas and to encourage initiative by the States in undertaking the necessary program leadership and coordination. Efforts to encourage State leadership in small watershed programs are strengthened by the growing demand in the Tennessee Valley for State action to conserve water and assure its orderly use.

Major TVA activity to date in tributary watersheds has been in the State of Tennessee. The Chestuee watershed of east Tennessee was selected by TVA in 1951 as an experiment and demonstration in methods of local development. Because of its experimental and demonstration features, TVA is taking a more direct part in the activities in Chestuee watershed than will be the case in other watersheds. The project is coordinated through a series of agreements with the University of Tennessee and other State agencies. The demonstration of results in Chestuee was one of the factors which encouraged the State of Tennessee to take direct leadership for the development of other tributary watersheds within the State. During the past year the State has created the office of Coordinator for Tributary Watersheds. The Beech River area of west Tennessee was selected to initiate a State program for comprehensive watershed development, with additional watershed projects to be undertaken by the State later according to its interests. The assisting role of TVA and other agencies in the conduct of this State program is expressed in a memorandum of understanding negotiated during the current year and signed by the Governor of Tennessee.

During the past year TVA has prepared for discussion purposes prereconnaissance surveys of representative watershed areas in four additional States—Alabama, Kentucky, Mississippi, and Virginia. Preliminary discussions have also taken place in North Carolina. Conferences between TVA staff and State officials during the current year are expected to lead to State–TVA relationships for watershed development in these States adapted to individual watershed needs and to the separate State organizational structures.

The 1956 estimate for tributary watershed development is $336,000, compared to the 1955 budget of $310,000. During 1956 research projects now in progress will be continued. Developmental activities in the Chestuee and Beech River watersheds now under way will be carried on at a slightly decreased level. The 1955 budget provides a small amount for beginning a new demonstration project in a watershed not yet identified if State interest warrants. The extent to which the TVA will obligate funds for specific development projects will depend largely on the extent of State activity. The tributary watershed development work is made up of the following.

Basic investigations, $106,000

Development of an effective program for conservation and use of land and water resources in a particular tributary watershed requires detailed information applicable to that type of watershed. TVA's watershed research program obtains basic information on soil and water behavior under conditions peculiar to the valley. This research is essential since data obtained in other areas are not directly applicable to Tennessee Valley watersheds.

Waynesville Single-Practice Project.—Since 1948 TVA and North Carolina State College have studied the effects of cover crops and trees on the water resource of

six small watersheds near Waynesville, N. C. TVA furnishes the instruments for measuring precipitation, streamflow, runoff, and similar hydrologic factors and the personnel to evaluate and interpret the findings. The institution supervises the agronomic aspects of the project, which primarily consist of making changes in the type of land cover in order that the effect of various covers on hydrology can be measured.

Parker Branch pilot watershed.—This watershed of about 1,000 acres in privately owned farms is located in western North Carolina. The project, which is being carried out in cooperation with North Carolina State College, is the only watershed project in the United States where the effects on a stream of the development of best land use, economically speaking, are being measured with research accuracy. Plans for highest economic development of the individual farms will be prepared. Fertilizers supplied by TVA and other incentives will be used to obtain the cooperation of the farmers of the area in putting these plans into effect. Changes in land use that result will be related to the changes in the character of the stream. Changes in income and living standards of the farmers as they adopt the better farming methods will be studied. Primary emphasis to date has been on hydrologic calibration of the area and determination of present land-use practices and changes to be promoted on the individual farms. In 1956 intensive efforts to accelerate changes in land cover will be made. The cooperative arrangements with North Carolina provide for joint participation similar to that described under the Waynesville project.

A small watershed in the Norris Reservoir area is being used in a study of the effects on sedimentation, streams, ground water, and other hydrologic factors of a land-management system devoted primarily to watershed protection.

Chestuee watershed, $136,000

A coordinated demonstration program for the development of Chestuee watershed in Tennessee was started in 1951. The entire program is being carried out in close cooperation with the University of Tennessee. Important contributions are also being made by many other groups, such as the Tennessee Department of Health, the Tennessee Department of Education, the Tennessee Department of Forestry, county and town governments, and rural communities. During fiscal year 1954 the direct financial contributions of other agencies were approximately the same as the direct TVA costs. This does not include the money and labor that the farmers put into the project in adjusting their farming systems.

The program in Chestuee, while it grew out of land- and water-use problems, is not limited to physical measures. It is also concerned with the general economic strength and welfare of the area. While activities are focused on the 134-square-mile area drained by Chestuee Creek, some of the activities can better be organized on a broader geographical basis—for example, the three-county area in which the watershed is located—and are not confined precisely to the watershed boundary. Basic changes are beginning to become apparent in the watershed and adjacent area. Acreage in improved pastures on test-demonstration farms increased from 1,016 acres in 1950 to 3,874 in 1954. Countywide forest-fire protection is now available in 2 of the 3 counties involved. Over 200,000 trees have been planted since 1950. Sample surveys show that substantial changes in land cover have occurred, particularly on the lands where water runoff had been heavy. Sediment discharged into streams has been reduced by almost half. Farmers and others in the area have begun to clear Chestuee Creek of debris to help reduce high-water stages. Community organization has been strengthened. A multicounty health unit has been organized.

During 1956 hydrologic measurements and analyses will be continued at about 1954–55 levels. Agricultural development in the watershed will be continued under the supervision of two special agents of the University of Tennessee who assist regular county extension forces in their work with farm families and local organizations. One hundred and thirty tons of fertilizer will be distributed to 40 test-demonstration farmers under a partial-payment plan to stimulate the demonstration of improved fertilization and farm practices. Assistance in forest development in the watershed in 1956 will include the distribution of 100,000 seedlings and the conduct of numerous meetings, conferences, and demonstrations to promote better forest protection, management, and utilization.

A cooperative study on human nutrition in the Chestuee watershed will continue under the direction of personnel from the staff of Vanderbilt University. Support of the cooperative public-health program sponsored by TVA and the Tennessee Department of Public Health will be continued.

Beech River watershed, $78,000

The Beech River watershed covers 302 square miles in west Tennessee. Agriculture is the major industry in the Beech River area but large areas of land are unused and unproductive. The upland soils are washing away, and the bottom lands are subject to flooding and silting. The area has had a population loss, per capita income is very low, and industrial development has lagged. State and Federal expenditures in the area are disproportionately high compared to public revenues collected. Without special attention to its problems, it seems certain that the resources and economy of the Beech River area will continue their decline.

TVA made a survey of the Beech River area which defined many of the problems and suggested possible improvements. The people of the two counties in the watershed have expressed great interest in a development program for the area and have organized a local watershed committee which is planning specific measures to be undertaken. The State of Tennessee has taken leadership in the development of the Beech River watershed and the governor has designated a representative to coordinate the work of the various participating groups, including TVA.

Primary activities to be carried on by TVA in 1956 include hydrologic measurements and studies. TVA will also assist by conducting farm test-demonstration activities and by making available special assistance in rural community organization. During 1956, 30 test-demonstration farms will receive 90 tons of fertilizer at reduced prices. Landowners will be furnished 1.5 million seedlings for reforestation. Through meetings, demonstrations, and conferences interest will be developed in forest-fire prevention, soil erosion, forest management, and better utilization of watershed forests. Technical assistance to develop local opportunities, as in industry and recreational facilities, also will be provided.

Other watersheds, $16,000

Results of earlier reconnaissance studies of watersheds in other valley States than Tennessee will be presented to the State governments in 1955 and efforts will be made to encourage the States to assume leadership in planning and carrying out development programs in these areas of special need. Where warranted by State and local interest, TVA may join with State and local organizations in development projects. By 1955 it is expected that one new development program will be started, provided it is initiated by the State. The 1956 estimate provides for continuing limited technical and financial assistance in that watershed. These plans are dependent entirely on the response of the States.

TOPOGRAPHIC MAPPING ($100,000)

TVA's planning, construction, and operational activities have depended heavily upon adequate topographic maps of the valley area. Such maps were practically nonexistent in the Tennessee Valley in 1933. To have maps in time for them to be of real service, TVA sponsored a mapping program which is carried on cooperatively with the United States Geological Survey. Valley maps are made to USGA standards and specifications and are a part of the national series.

About two-thirds of all the published valley maps distributed have gone to individuals and organizations outside TVA. A charge is made for maps so distributed. Users of valley maps require them for industrial development, route-location studies, mineral resource development, forestry and logging operations, recreational use, and other purposes.

The valley topographic mapping program was started in 1937 and was scheduled for completion in the 1940's. World War II prevented realization of this goal. In the fall of 1941 TVA was asked by the United States Army to accept responsibility for mapping strategic coastal areas. Extensive foreign areas were added to this assignment and valley mapping, already curtailed, was laid aside until after the Japanese surrender.

The scheduled program covers 770 quadrangles, or about 46,000 square miles. By June 30, 1955, approximately 80 percent of the work will have been done. Some 200 quadrangles will remain to be completed. The unfinished quadrangles represent many areas of peculiar interest to TVA. That they are of interest to persons outside TVA is borne out by the fact that in 1953 TVA received 200 requests for maps of areas not yet completed. About $1 million has been spent on these unfinished quadrangles, mostly for aerial photography, basic field survey work, and other activities preliminary to actual drafting. Completion of this

mapping will permit the present investment in unfinished quadrangles to be recovered in the form of published maps of great benefit to both TVA and the public. The 1956 estimate is $100,000.

GOVERNMENT AND ECONOMICS STAFF STUDIES

Through June 30, 1954, TVA conducted various surveys and studies useful in guiding and controlling the extent, sequence, and nature of resource development programs that will foster an orderly and proper physical, economic, and social development of the region. This research work was terminated at the end of fiscal year 1954. During that year $103,130 was spent. Residual functions of the staff that performed these studies are of an advisory and service nature. The primary function of the staff is to make special studies at the direction of the General Manager or upon request of other organizations. These studies are useful in planning, administering, and reviewing the primary programs of TVA and are described under the section, "Administrative and General Expenses," to which they are charged.

Mr. RABAUT. A total of $1 million is programed for resource development. This is an increase of $133,000 above the current year estimate.

Much of your resource development program seems to be a matter of cooperation, with the advice of local communities and other States.

Since this has been going on for many years, with outstanding results, why are not the States now ready to stand on their own feet, with respect to such a program?

ASSUMPTION OF RESPONSIBILITIES BY STATE AND LOCAL AGENCIES

Mr. WAGNER. Mr. Chairman, many of the activities which have been included in this program in the past have been discontinued entirely, and are now conducted by the States.

As I believe will be shown by looking back at previous budgets, the budget for this activity in the past has been considerably larger.

There are still some programs in which work needs to be done, and those are the categories which remain in this budget.

Mr. RABAUT. Suppose, before you tell us about what remains to be done, you tell us as to what activities have been discontinued, and taken over by the States, and you may supply that information for the record.

Mr. WAGNER. That will be fine.

(The information requested follows:)

Direct TVA participation has been discontinued in the following resource development activities in which it originally provided leadership and financial support. State and local agencies have assumed responsibility and leadership:

(*a*) Mineral resource development
(*b*) Recreation resource development
(*c*) Food processing research
(*d*) Agricultural engineering research and demonstration
(*e*) Industrial development assistance
(*f*) Analysis of regional business and government activities

Except for studies necessary to determine the effect of TVA operations on water resources and on fish and wildlife, TVA has withdrawn from active development work in these additional activities:

(*a*) Fish and game investigations
(*b*) Stream sanitation investigations

TVA participation in the financial support of the following activities is now nominal, compared with State and local programs, resulting from a steady shift of responsibility in recent years:

(*a*) Soil survey
(*b*) Research on forage crops and animal industry
(*c*) Forest protection

Mr. RABAUT. You may proceed with a discussion of your continuing program as it is today.

RESOURCE DEVELOPMENT PROGRAM

Mr. WAGNER. The title "resource development" for this category of our budget perhaps requires some explanation. Actually, all of our activities and programs assist in a fuller development of the region's resources. But in the budget category to which we have given this title, we include several activities where we work most closely with the States in an effort to help them develop and expand their own programs to get fuller use of the States basic resources. As they move in this direction, their income base is improved and both the region and the Nation benefit.

In 1933 no Tennessee Valley State had a firmly established planning and development agency. TVA encouraged and assisted the States to set them up. Now all 7 of the States have them and there are some 60 local government planning commissions.

We have also encouraged and assisted the States and local groups in setting up other organizations whose major purpose is better use of the region's resources. There are now a number of these agencies covering such fields as stream pollution, forestry, and wildlife, conservation, minerals, agriculture, and recreation. They valley States have increased their expenditures in these fields substantially since 1934 but are still at a level somewhat below the rest of the Nation.

Our program now includes agricultural resources development, forestry resources development, the tributary watershed work, and topographic mapping.

The work on tributary watersheds and in forestry make up the largest part of the resource development program.

Mr. Kilbourne, our director of forestry relations and the chairman of our tributary watershed committee, is here. I would like to have him answer questions on those programs for you.

Mr. RABAUT. We shall be glad to hear from Mr. Kilbourne.

IMPORTANCE OF FORESTRY IN THE VALLEY

Mr. KILBOURNE. Mr. Chairman, I have some notes in regard to these programs, and we may take the program of forestry first.

I would like to explain briefly the importance of forestry in the valley.

More than half of the area of the valley is in forest lands, constituting some 14 million acres, about 11.5 million, or 82 percent of these lands, are owned by private individuals. The present value of forest production in the valley to private-land owners and businesses amounts to around $400 million per year. That is an increase from 1933 when that figure was around $100 million, and as we see it, the potential can be increased to somewhat over $1 billion per year.

Mr. RABAUT. Is that increase brought about as a result of selective planting and cutting?

Mr. KILBOURNE. Well, it is a combination of the factors which I shall mention in a moment, sir.

Mr. RABAUT. Very well.

Mr. KILBOURNE. One in every five industrial wage earners in the valley works in the forest industries, or in the wood processing industries. An additional interest, we have in this industry is the watershed protection value of our forests which involves 14 million acres of forest lands located on the steeper slopes in areas of higher rainfall.

OBJECTIVES OF FORESTRY PROGRAM

We have three objectives: The first objective is to bring the forest lands to the point where they will make their maximum contribution in soil and water conservation, and streamflow stabilization; the second objective is to raise the productive capacity of these forest lands to the optimum, which we estimate to be over $1 billion a year and which is more than twice the present value; the third objective is to strengthen the State and local agencies so that they can do an adequate job in forestry.

COOPERATIVE PROGRAMS

In connection with this work, we have underway in the valley cooperative programs in 4 categories; 1 in forest fire protection. Fire has been the No. 1 problem in the valley. The percentage of area burned over has varied from 10 percent to 15 percent of the forested area annually. We are hoping that this can be reduced to the level of a normal business risk, which we regard as being an annual burn of not more than twenty-five one-hundredths of 1 percent of the forest area.

The second program is in getting these forests which are in private ownership under systematic sustained yield management by individuals, or the industries who own them. Third, to get reforested some 1.5 million acres of badly eroded idle land which is nonproductive and finally, to improve the utilization of forest products which the valley is producing. As of now, only about 33 percent of a tree ends up in products.

I would like to illustrate these points by explaining one activity. If I may hand you a map, sir, I will be able to better explain it.

IMPROVING SAW MILL OPERATION

That map shows the location of the saw mills of the industry to process our forest products.

Mr. RABAUT. Are they mobile?

Mr. KILBOURNE. Some are portable and some stationary.

One of our activities aimed directly at improving this resource has been to make a study of these mills, their actual operations. We have summarized results in a series of leaflets which I can show you here.

The information in these three leaflets is information which has resulted from our analysis of these operations, and put up in a form where the owners and operators of these mills can use them in analyzing their own operations.

These studies reveal two practices which were very common. One was that the mills were cutting very small logs and the other was that they had a lot of lost time.

We organized a series of 34 sawmill conferences attended by 2,700 people, including representatives of some 1,000 mills.

If you assume that only 500 of the representatives of these mills who have been provided with this information have put these practices into use; in other words, if they cut down lost time 1 hour per day and increase the size of their small logs, they can make $3½ million a year more than they are making at the present time.

That is one illustration of just one type of activity.

COOPERATIVE FIRE PROTECTION WORK

On fire protection we have worked through the State and local agencies in an effort to get this fire problem licked and we think we have made some progress, in cooperation with the States and local agencies.

In 1933 less than half of the forests had any fire protection. Now over 90 percent of them are protected. There still remain about a million and a half acres that need protection, and the quality of protection is not uniformly good.

REFORESTATION

In reforestation, in 1933 only about 4,000 acres had been planted in the valley out of a total of some 1.8 million to 1.9 million acres that needed planting.

Since that time we have provided trees for reforesting some 238,000 acres.

There remains, however, about 78 percent of this land which still needs to be planted.

FOREST MANAGEMENT

We have approached forest management through the education and demonstration approach working with private owners, timber operating companies, investors, or whoever they may be. We have set up a series of demonstrations in that type of work in which there are actual operating timber projects.

You will find this map interesting. In the early thirties this map shows an area which was proposed for purchase by the public as Federal forest. Many people felt the only hope for the future of these areas was public acquisition. Some of us felt otherwise.

We believed there was hope for the private owners developing this area through fire protection and other methods, developing permanent operations——

Mr. WAGNER. The areas we are talking about are in the light blue color.

Mr. KILBOURNE. It is in the general Cumberland section and the western highland rim.

This map shows as of now the following: We set up a series of demonstrations marked on that map in those areas which people felt could only be solved by public acquisition.

Those maps will show you the areas that are now in private ownership and under actual forest management or have recently been acquired by private interests for that purpose.

We have set up a series of demonstrations totaling about a half million acres in which we have helped the landowners, through the State agencies, to get the sustained timber management idea started.

Mr. RABAUT. What kind of timber do you have?

Mr. KILBOURNE. Hard woods mixed with pine.

I have another map here which will show you that.

In addition to the areas of demonstration we have set up there have since been 27 other areas totaling some 500,000 acres on which the private landowners, by going to these demonstrations and getting the information which we had to give them, have adopted the idea and have gone into business and have set up their own operations under private management.

Our whole approach is based on fact finding, analysis of those facts, making information available, through the education and demonstration approach.

TRIBUTARY WATERSHED PROGRAM

Mr. KILBOURNE. In the tributary watershed program I have a statement, Mr. Chairman, which with your permission I might give you.

Mr. RABAUT. Insert it in the record at this point.

Mr. PHILLIPS. Is this on watersheds?

Mr. KILBOURNE. Tributary watersheds, sir.

(The information referred to is as follows:)

TVA TRIBUTARY WATERSHED PROGRAM

TVA'S APPROACH TO TRIBUTARY WATERSHEDS

The TVA Act authorizes TVA to aid in the proper use, conservation, and development of the natural resources of the Tennessee Valley.

As one method of helping achieve these objectives we want to try to discover how communities of rural people faced with land and water problems can, under State leadership, identify these problems, organize to meet them, and find solutions with a minimum of Federal assistance.

To do this we propose to help establish under top-level State leadership local experimental demonstrations of intensive integrated resource development based on small watershed units.

These demonstrations will be used to seek answers to questions on (*a*) physical problems such as land and water problems, (*b*) associated economic and social problems, and (*c*) techniques of administrative methods and procedure, for the general purpose of fostering an orderly and proper physical, economic, and social development of these watershed areas.

RECENT AND CURRENT ACTIVITIES

About 1939 or 1940 TVA started selecting a small watershed which had water and land use problems in which we could concentrate our efforts and those of the State agencies and the local people in an integrated program directed toward solving these problems and improving the economic base of the people in the watershed. Many areas in the valley were examined and Chestuee Creek watershed (85,000 acres) in McMinn, Monroe, and Polk Counties was selected for a development program in 1943. This project was set up with the University of Tennessee as the major State cooperator, with the university providing the State leadership. Initially, major emphasis was on determining and bringing about the needed changes in land use through agricultural measures. This program has been broadened to include local participation in projects in health, forestry, use of electricity on farms, and teacher workshops. This project is carried forward under a formal agreement between TVA and the university. Significant progress in this area is reflected by improvements in land use brought about by the landowners between 1944 and 1954.

	1944	1954	Net changes	Changes
	Acres	*Acres*	*Acres*	*Percent*
Cropland	34,543	28,190	−6,353	−18.4
Pasture	16,234	22,629	+6,395	+39.4
Forest	32,048	32,994	+946	+2.9
Other	2,175	1,187	−988	−54.6

Further indication of progress in this watershed is shown by the decrease in suspended sediment in streams of the watershed. This reduction amounts to 48 percent at the Dentville measuring station, which is near the lower end of Chestuee Creek. This reduction indicates a marked decrease in erosion over the past 10 years.

After observing the workings of the Chestuee project for several years, TVA decided to try a new approach in which all the State agencies could participate, with the State assuming more responsibility for leadership. We made preliminary reconnaissance on watersheds in several States. Reports on these were sent to the governors. These studies show that in areas of this type, as illustrated by one situation, State revenues originating in these counties are about half of the State average ($23 and $39). State expenditures in these same counties were almost double per capita ($81 and $47). These figures dramatize the financial stake of the State in the development of its less advantaged parts. The processes by which State revenues are increased through greater productivity lessen the need of State expenditures for equalizing local services. We signed a memorandum of understanding with the Governor of the State of Tennessee in 1954 to undertake a tributary watershed project under State leadership. The Beech River area in Henderson and Decatur Counties, Tenn., containing some 193,000 acres, was selected. This area was chosen because there were many problems of land use adjustment, local flooding, and a high incidence of serious erosion. Also there was strong local interest. In this project, leadership responsibility was assumed by the State. A State coordinator of tributary watersheds was employed and stationed temporarily in the Beech River watershed.

A good start has been made in land use improvements here as illustrated by the fact that landowners this year planted 1,500,000 trees to reforest 1,500 badly eroded acres. During the past several years landowners have planted 7 million trees. In addition, the landowners through their county courts are contributing to and participating in an effective forest-fire-control program, which has resulted in a significant decrease in forest fires which previously burned uncontrolled over much of the 77,000 acres of forest land.

In 1947 it was found that we needed more basic information on the relationship between land use, particularly agricultural crops, and water and erosion. This prompted us to set up near Waynesville, N. C., a series of 6 small experimental watersheds of less than 10 acres each where we test the effects of a series of single crops. In 1952 we started on the Parker Branch experimental watershed of about 1,000 acres involving some 47 farms. From these experiments we are seeking facts on the effect of changes in land use practice on erosion and on water, as well as the economics involved in making what appear to be desirable land-use changes. Both of these projects are operated under contract with the North Carolina State College.

1955 PROGRAM

The present program involves the basic investigations work described above plus continuation of measurements on two small forested watersheds and development programs in Chestuee under contract with the university, and in Beech River under contract with the State, represented by the department of conservation. It is proposed to continue these two programs in 1956 in order to realize the benefits of the work already under way.

THE PROGRAM AHEAD—1956

Present plans call for making a reconnaissance of one tributary watershed in 1956 and starting a development program in 1957 on the watershed surveyed in 1956. During the next 5 years we hope to have development programs under way in 3 watersheds in addition to the 2 now under way. It is expected that TVA's participation in the Chestuee watershed will begin to diminish in 1957 or

1958 with the assumption of greater responsibilities by the State and local people. During the next 5-year period, TVA's participation in the Beech River project will diminish as State and local leadership and participation become increasingly effective.

There is urgent need for additional basic information on the physical and economic aspects of land use adjustments for agriculture and forest crops in relation to hydrology. This basic information is necessary to provide guidance for the development programs.

Funds requested for tributary watershed work in 1956 amount to $336,000.

Further explanation of TVA's approach to tributary watersheds is contained in Public Administration Review, winter 1955, entitled "State Watershed Policy and Administration in Tennessee," and Tennessee Conservationist of March 1955, entitled "Small Watershed Resources in State To Be Developed."

Mr. KILBOURNE. We have now 2 watershed projects in action, 1 in the eastern part of Tennessee and 1 in the western part. One is called Chestuee and one Beech River. We are hoping in 1956 to start a third one in some State other than Tennessee.

OBJECTIVES OF TRIBUTARY WATERSHED PROGRAMS

We are attempting in that program, as is set forth in this paper, to do there things—to seek answers to questions on how the local people, the rural people, can find answers to physical problems such as land and water problems, and how they can find answers to associated economic problems, and, to discover how groups of local people, with a minimum of Federal assistance, can themselves organize to meet these problems associated in these small watersheds where there is usually a local flood problem, and there may be a bad land-use problem, and, generally a poor economic situation.

Mr. RABAUT. All right.

STATE LEADERSHIP IN TRIBUTARY WATERSHED PROGRAM

Mr. WAGNER. A very important feature of our work in the tributary watershed program is that the States take the leadership. We have an agreement with the State of Tennessee, for example, signed by the Governor under which the State agrees to take that leadership in the program. TVA provides assistance as they request it and as we are able. The program is mainly dependent upon local initiative and action in the watershed, exercised under that State leadership.

This I believe distinguishes it from other small watershed programs.

Beyond that it is distinguished by the fact that the programs include work in forestry, agriculture, public health, recreational development, and the whole general field of resources development.

Mr. RABAUT. We will continue this hearing this afternoon at 1:30.

I wanted to ask about resources development, I wanted to conclude that, and then go into administrative and general expenses.

Mr. PHILLIPS. I have a continuing line of questions on the amount of power produced.

I did not have my figures with me yesterday afternoon when I started discussion on that. I have 10 or 15 minutes.

It is important in marking up our bill.

Mr. VOGEL. And I would like to seek the committee's indulgence of about 5 minutes relative to administrative and general expenses.

COMMENDATION OF TVA

Mr. RABAUT. If you are not all coming back I would like to say a word of praise for the agency.

I am very greatly impressed with the devotion that you have to your work and the good that you have accomplished.

I think the good you have accomplished is not only for the local area—of necessity it is in this local area because everything has to be located some place since that is the nature of things—but this has extended itself to many parts of the country and it has sought to set patterns beneficial to mankind.

I think the type of work you are doing is very commendatory.

Mr. WAGNER. We appreciate that statement, Mr. Chairman.

Mr. RABAUT. Not only do we say something about this as regards the assistance to agriculture but the great part that you had in the assistance to the defense of our Nation is to be commended. In other words, the power you generated there, generated under your supervision, General, is the very parent of the new power upon which we are so vitally dependent today.

As you said, we cannot hope to match the manpower of the world when we have these international gangsters running around grabbing whole nations. We seek no territory but we seek only to live peacefully with other peoples.

Of necessity, however, we have been forced to carry a big stick and let us hope we will be very thoughtful before we use it, but I remain firm that we shall have it.

I say that because I want to say it in the presence of all of you who are part of this enterprise, in positions of leadership in various departments, and for that reason I make the statement now rather than at the conclusion of the presentation, so you may be released to your respective spheres of activity, and those who need to return we will see you this afternoon at 1:30.

AFTERNOON SESSION

Mr. RABAUT. The committee will come to order.

FOREST RESOURCE DEVELOPMENT

We will proceed with Resource Development.

Could these services be made self-sustaining by charging nominal prices for seedling trees and possibly through State contributions to cover salaries of some of your experts providing them with advice, or by contribution to your research work of direct benefit to them?

Mr. KILBOURNE. Will you break that down?

Mr. RABAUT. How about moderate prices for seedling trees?

Mr. KILBOURNE. Trees cost TVA about 55 cents a hundred. The average size of the plantings are on the order of 3,000 to 4,000 trees. In other words, they are small. We regard this as an incentive and an educational means of getting people interested in doing something about forestry.

We seek the end result of getting the people's interest in fire protection and in the management of their timberlands, we have 245,000 forest landowners in the valley, most of whom own forest land of less

than 100 acres. This is simply one way of getting those people to take the first elementary step in a forestry program.

Mr. RABAUT. How about State contributions?

Mr. KILBOURNE. Would you repeat your question about State contributions?

Mr. RABAUT. And possibly through State contributions for the same thing?

Mr. KILBOURNE. States are making a contribution in this program.

Mr. RABAUT. Toward the 55 cents per hundred?

Mr. KILBOURNE. No, sir. As TVA grows the trees they are made available to the State forester. He makes the allocation, conducts the promotional work, so that TVA's part of it lies in the production and the overall coordination of the project.

Mr. RABAUT. You do not think, then, there is any way of getting money out of that part of it?

Mr. KILBOURNE. We have not discovered any practical way; no, sir.

Mr. VOGEL. I think we are selling some to agencies of the Government. Is that not true?

Mr. KILBOURNE. Yes, sir. We grow under contract for other Federal agencies—Forest Service, Army engineers, and others.

Mr. RABAUT. How much do you charge them?

Mr. KILBOURNE. $5.50 a thousand.

Mr. RABAUT. In charging for that I thought you might be able to recapture some funds which you would be expending in the furnishing of technical advice by your people to them. That would be part of the charge. You say technical advice goes with putting in these trees. Wouldn't it be possible under such a circumstance to get a fee out of it?

Mr. KILBOURNE. The planting of the trees is done under supervision of the State and local agencies. We do not give technical advice on the planting of the trees. That is done by the States and State forestry people.

Mr. RABAUT. Don't you give them advice after you once sell them the trees?

Mr. KILBOURNE. No, sir.

Mr. RABAUT. That is the end of it?

Mr. KILBOURNE. That is right.

Mr. RABAUT. I thought you gave advice on the subject, too.

Mr. KILBOURNE. On the general subject of management and utilization and fire protection, yes, sir, but not in the reforestation end of it which we are talking about now.

Mr. RABAUT. So you feel there is no way you can get a contribution toward your research work which is of direct benefit to them?

Mr. KILBOURNE. No, sir. The cost of collecting from several thousands of owners say $2.50 to $4 for a few thousand would be too difficult.

Mr. RABAUT. Where do you feel this program, then, has its great benefit to the Nation? I am speaking now of the tree planting.

Mr. KILBOURNE. I think in the first place it will move from the debit column to the profit column an area of about 1,900,000 acres of land which has been eroding, carrying silt into the streams. In that process we will be creating a resource which at the age of 45 years will have a value of somewhere on the order of $80 million. That is the resource that will be created on this 1,900,000 acres of now idle, eroding, and abandoned land.

Mr. RABAUT. Does the fact that they put these seedlings into the acreage affect the assessment on the properties?

Mr. KILBOURNE. I assume it does, sir, because it changes it from the class of abandoned land into one which is productive.

Mr. RABAUT. So in that way it is beneficial, too?

Mr. KILBOURNE. Yes, sir.

Mr. RABAUT. Last year you were planning to close down your seedling nursery at Muscle Shoals. Have you done this?

Mr. KILBOURNE. Yes, sir.

Mr. RABAUT. Where do you have it now?

Mr. KILBOURNE. We concentrated our production at the nursery at Clinton. We had 2 nurseries, 1 at Muscle Shoals and 1 at Clinton, Tenn.

Mr. RABAUT. What types of trees have you in seedlings?

Mr. KILBOURNE. We produce the southern pine, short-leaf pine, loblolly pine, and white pine.

CHESTUEE WATERSHED PROGRAM

Mr. RABAUT. Is the State of Tennessee now planning to take over or has it taken over the Chestuee Watershed program?

Mr. KILBOURNE. They have not yet taken it over. There are a number of reasons for that. The Chestuee project was started out under a contract and still is operating under a contract with the University of Tennessee. They are providing leadership there, State leadership in the Chestuee area.

We are hoping that it will ultimately fall into the same pattern as the Beech River project. The Governor's deputy, who is the commissioner of conservation, is conducting work there.

AGRICULTURAL RESOURCES DEVELOPMENT

Mr. KIRWAN. I see agricultural resources development. Is that under your head or the head of the Agriculture Department?

Mr. WAGNER. Under our own organization, Mr. Kirwan.

Mr. KIRWAN. How about topographic mapping?

Mr. WAGNER. That is done by our own people. It is a project in which we cooperate with the United States Geological Survey.

Mr. KIRWAN. Don't you think you are going too far afield there? Here we have in the Agriculture Department thousands and thousands of employees. It is all right to go into fertilizers but I do not think you should go all over the lot.

Mr. WAGNER. Our expenditures in the field of agriculture are very modest compared with the expenditures of the Department of Agriculture. We do not do any of the same work that they do. Rather we have concentrated on a few problems that are peculiar to the Tennessee Valley region and we concentrate our studies on those problems.

Mr. KIRWAN. Off the record.

(Discussion held off the record.)

Mr. RABAUT. We will suspend briefly in order to answer the rollcall.

(Recess taken for 10 minutes.)

Mr. RABAUT. We will resume, gentlemen.

Mr. WAGNER. I would like to answer your question this way, Mr. Kirwan: These activities we are talking about here, along with the others in TVA, are part of the total field of activities that we engage in in trying to help develop the Tennessee Valley region.

The Department of Agriculture works in the valley, too, but we try not to duplicate them, and we do not. We tackle, as I say, special problems peculiar to the region on which the USDA does not work and we hope the results of our work helps to make their work nore effective.

The same thing is true, I believe, in forestry and the fact that we in TVA work in all these fields, tying them together and relating them to each other, we believe helps us to do a better job.

I wonder if your question might have been prompted by the thought that more money of this kind is spent in the Tennessee Valley than in other areas?

Mr. KIRWAN. Not altogether that.

Mr. WAGNER. I would be glad to comment on that.

Mr. KIRWAN. Off the record.

(Discussion held off the record.)

FOREST RESOURCE DEVELOPMENT

Mr. FOGARTY. For forest resources development, which is just a part of this appropriation request, you are asking for $471,000 this year, which is about $40,000 more than you had available in 1955. What is the reason for that increase?

Mr. KILBOURNE. It is made up of a number of items. I will mention the larger ones. In the past 2 years our funds have been so short that we have had to draw on reserve supplies of tree seeds and other materials at our nurseries, which need to be replenished if we are going to continue. Also we are going, this year, to concentrate more effort on the problem of the small woodlands which I referred to before lunch. One of the major problems in forestry in this area, is to assure proper management of our small woodlands.

We made a survey recently and found that only about 12 percent of the forest lands of the valley were well managed. The biggest area of forest land in the valley is in ownerships of 500 acres and less, mostly owned by farmers, and we are hoping this year to review everything that has been done in the area and to try to come up with some answers as to how those lands can be made more productive as part of the overall resource development project.

Mr. FOGARTY. How much have you spent up to date on forest-resource development?

Mr. KILBOURNE. I would have to refer to the budget officer, if I may, for that figure. I do not have it at my fingertips.

Mr. VAN MOL. I do not have the figure with me.

Mr. KILBOURNE. We will supply it.

(From 1934 through 1954, $9,388,373 has been expended for forest-resource development.)

Mr. FOGARTY. Also supply how many seedlings have been planted with that amount of money.

Mr. KILBOURNE. We have that figure. We have produced 338 million forest seedlings. With that number, 224,000 acres of land have been reforested using 279 million trees. Fifty-nine million

seedlings have been produced under contract for other public agencies. Seedling production of course is only one of the activities in forestry work in TVA.

Mr. FOGARTY. When was this program first started?

Mr. KILBOURNE. In the fall of 1933.

Mr. FOGARTY. And what is the average number of seedlings planted in that area per year?

Mr. KILBOURNE. In the Tennessee Valley, it has averaged somewhere around 12 million—it ranges from 12 million to about—the highest, I think, was 18 million.

Mr. FOGARTY. And it takes about 45 years before this wood is marketable?

Mr. KILBOURNE. No, sir; we can start getting material from it at the age of 15 years. As a matter of fact, TVA recently sold some pulpwood from its lands to the Bowwaters Paper Co. It was opened to public bid and Bowwaters bid it in. Based on those figures, when those stands we have been talking about reach the age of 15 years, they will have products in them worth about $3,600,000, and at the age of 45 years the residual material will be worth in the order of $18 million, on those 224,000 acres that we are talking about.

Mr. FOGARTY. Give me a brief explanation of "residual."

Mr. KILBOURNE. It is what you have left. You take out maybe one-fourth or one-third and what is left we call the residual stand.

EFFECT ON LUMBER INDUSTRY IN OTHER SECTIONS

Mr. FOGARTY. What effect has this program had on the lumber industry in other sections of the country, if any?

Mr. KILBOURNE. I can explain that best by referring to an illustration. You know Mr. Jacobson, the State forester in your State?

Mr. FOGARTY. Yes; a very good man.

Mr. KILBOURNE. An excellent man. We have supplied him with information, as we have Mr. Alderman of Ohio. As a matter of fact, during the past few months, perhaps 18 months—I checked up recently—we have, in response to requests, sent technical information to some 40 States in the United States. People have written asking for copies of our various publications such as we showed you this morning, including Mr. Jacobson and many others. That is one benefit, as I see it.

Another is that, because of the approach TVA has taken to resource development, we have been able to take new approaches to old problems and I think we have come up with a number of answers—I know we have—particularly in the problem of small sawmills which I mentioned this morning, which is receiving wide attention all over. Just recently we got orders for several hundred copies of our publications from the State of Maine, and this last week we received a request for a publication on a private management contract to be operated by consultants. That request was for 50 copies from the State of Washington. Practically every State that has a forestry organization has used our experience and technical information derived from that experience, which is printed in publications. Last year we found that, in response to requests, we have sent out something in the order of 20,000 copies of technical publications and reprints based on the work we have done in the valley.

Mr. FOGARTY. You may have misunderstood my question. My question was, since this reforestation program has been developed in that area, I was wondering what would be the competitive advantage or disadvantage to other sections of the country, since you are in this business of growing lumber in that area?

Mr. KILBOURNE. That is a very difficult question to answer briefly and simply. I do not think we are upsetting any balance of the forest-products industry economy. The valley region is an area of mixed pine and hardwood. We have some of the finest hardwoods in the world and it is an important part of the relatively small hardwood growing area of the world. And throughout the whole South the pulpwood business and the lumber business is progressing very vigorously.

Now we are beginning fire protection and people are beginning to plant trees and beginning to manage their woodlands. I do not think it is going to change any particular balance.

REFORESTATION OF DEVASTATED LAND

The important thing is that here in this valley we have about 14 million acres of forest land, about 12 million acres of which was partially devastated forest land, which is now coming back into productivity.

Mr. FOGARTY. What do you mean by devastated? I do not think I have seen any of those woodlands that have been cut over but I remember being down around Louisiana during the maneuvers in the last World War, in 1941, and seeing some of that timberland there with stumps about 2 feet through that had been cut off some years ago and nothing was growing up. Is that what you call devastated land?

Mr. KILBOURNE. That is the type of land we are interested in reforesting, although we do not have the same type of topography and soil.

Mr. FOGARTY. Nothing else grows up?

Mr. KILBOURNE. That is right. It comes back into various undesirable scrub species of trees, of little or no value.

The 12 million acres I am talking about are not completely cut over, but much is in low-quality timber. In other words, the best material has been taken out, and it has been burned over badly, with the result that we have 2 or 3 million acres of land that has little on it except culls. Somebody mentioned here this morning post oak and blackjack. That is what I mean by devastated. We are interested in getting that land back into the productive column, producing some revenue for the people in the valley who own it—245,000 landowners and approximately 6,000 forest-products industries down there—sawmills and industries of that kind.

Mr. FOGARTY. What are the principal purposes of planting these seedlings—economic reasons, or protecting the watershed?

Mr. KILBOURNE. Both. There are two reasons basically. Much of this land has been eroded. After it was cleared, it was farmed and farmed poorly and hence gullies developed. That is part—the erosion and the watershed protection aspect. The other is simply getting that 1,900,000 acres back into the producing column, helping these people to improve their economic base. It is owned in small holdings.

Mr. FOGARTY. Less than 500 acres?

Mr. KILBOURNE. The bulk of it in less than 500 acres; yes, sir.

ASSISTANCE TO SMALL LANDOWNERS

Mr. FOGARTY. And you are concentrating on those smaller owned parcels of land. Does that mean you have been helping people who own more than 500 acres in the past?

Mr. KILBOURNE. Yes, sir. But that is a much simpler process; because there are only 100 owners of over 5,000 acres.

Mr. FOGARTY. But they were taken care of first?

Mr. KILBOURNE. Not necessarily first. We started working on both groups at the same time. It is much simpler to reach 100 people than it is a couple of hundred thousand. Also in the case of the large holdings, most of the owners were either in the lumber business or the coal business, or were investors. They could see the potentialities of such a program, in contrast to the man who owns 50 or 100 acres, who has some other business, which may be farming or something else. It is much easier to reach the large owners, and this map shows some of the demonstrations with some of the larger owners.

Mr. FOGARTY. What about the man with 50,000 acres and up; how many do you have in that category?

Mr. KILBOURNE. I would have to supply that. We have very few of them; I would say perhaps less than a dozen.

(There are 12 landowners with holdings of 50,000 acres or over of forest land.)

Mr. FOGARTY. But there are quite a few of 10,000 and 50,000?

Mr. KILBOURNE. Yes, sir.

Mr. FOGARTY. And they have been pretty well taken care of?

Mr. KILBOURNE. They are making very fine progress.

Mr. FOGARTY. They are really going to make some money out of this too, are they not, by the looks of this map?

Mr. KILBOURNE. Yes, sir. That is the reason they are doing it.

Mr. WAGNER. The nature of our assistance to those people, in general has been to persuade them to adopt better forest management methods.

If you are still thinking about tree seedlings, the number supplied by TVA to any one landowner is limited.

Mr. KILBOURNE. To 50,000 trees per year.

Mr. FOGARTY. 50,000 trees a year?

Mr. KILBOURNE. These are not areas where these people have gone out and planted; these areas we mentioned were areas with existing forests. Did I mislead you there?

Mr. FOGARTY. I guess so. I think these programs are good; they are doing them in my State in a small way just recently. But, as you say, it is difficult to try to get someone who owns a couple hundred acres to put a couple of hundred dollars in planting seedlings when it has never been done in that area before. Frequently they just cut off the woodlot and in 40 years they come back and cut it off again.

Mr. KILBOURNE. A lot of those people do not need to plant trees; most of them have timber stands, even though badly treated. The timber stands can be rebuilt by fire protection and proper management practices.

Mr. FOGARTY. I figure that is the only way you can do it, but it has always seemed to me, in all of these farm programs in the past in Congress over the years, it is the big farmer that gets the advantage of all these things Congress does, and the poor little farmer is still not making a living.

Mr. KILBOURNE. Those are the people we are working with.

Mr. FOGARTY. But at first you did not do much for them, apparently.

Mr. KILBOURNE. Yes, we did, sir.

Mr. FOGARTY. The small fellows?

Mr. KILBOURNE. Initially we started with both groups, but we have made considerably more progress with the larger ownerships than with the small ones. We worked with the small ones from the very beginning. What we are going to do next year is to concentrate on a review of the results of what we have done and come up with some better answers.

Mr. FOGARTY. Do you ever have any long-range program for this forest program?

Mr. KILBOURNE. Yes, sir; we do.

Mr. FOGARTY. What do you hope to accomplish in 10 years from now?

Mr. KILBOURNE. I do not think we have it broken down in 10 years.

Mr. FOGARTY. Well 15 years, or 20 years.

Mr. KILBOURNE. I can say this, that in the last 20 years the annual value of forest products has increased from $100 million a year for business, industries, and landowners, to now, $400 million. And I can say as soon as we got adequate fire protection and good management and get the lands reforested, it will be worth over $1 billion a year.

Mr. FOGARTY. Is there any duplication between your work and the Forest Service?

Mr. KILBOURNE. You mean the United States Forest Service?

Mr. FOGARTY. Yes.

Mr. KILBOURNE. No, sir; there is not.

Mr. FOGARTY. Do not they provide seedlings?

Mr. KILBOURNE. No, sir; not in this area.

Mr. FOGARTY. I mean in other areas of the country?

Mr. KILBOURNE. The Forest Service, I understand—and understand I am talking about somebody else's business and I am not an authority on it—but as I understand it, they provide a small amount of money to the States under the Clarke-McNary Act—that is small when broken down in terms of each State—for helping them in their reforestation program. But the planting job throughout the South—and that is the only part I know about—is so vast that it would require in the order of 11 billion trees to reforest all of the lands that need to be reforested in the Southern States. It takes the resources of all of the agencies. They just cannot get the money to supply the trees that are needed. Eleven billion trees would be needed to get the job done throughout the Southeast.

Mr. FOGARTY. What do you call "getting the job done"?

Mr. KILBOURNE. The lands that need to be reforested.

Mr. FOGARTY. To save the soil, or to provide lumber 40 years from now?

Mr. KILBOURNE. To get the lands that should be in forest reforested for watershed protection and for commercial production of forest products.

Mr. FOGARTY. How many seedlings are you going to raise this year?

Mr. KILBOURNE. We are planning to produce about 18 million.

Mr. FOGARTY. And how will they be distributed; where will they be distributed?

Mr. KILBOURNE. Twelve million will be made available to the State forestry services in the valley for use in this program.

Mr. FOGARTY. Just in the valley?

SALES OF SEEDLINGS TO GOVERNMENT AGENCIES

Mr. KILBOURNE. That is right. The other six will be produced under contracts with other agencies like the Army engineers and the Forest Service.

Mr. FOGARTY. Government agencies?

Mr. KILBOURNE. That is right.

Mr. FOGARTY. So anybody living outside of the valley would not be eligible to buy any of these seedlings?

Mr. KILBOURNE. No, sir.

Mr. FOGARTY. And you are going to spend $471,000 this year for that purpose?

Mr. KILBOURNE. $471,000 is for the entire forest development program; $119,000 of that is for reforestation.

Mr. FOGARTY. How much would it cost to raise those 12 million, cutting out 6 million?

Mr. KILBOURNE. The 6 million those agencies pay for? We are reimbursed; they pay us the cost of production, so that actually helps in the program, because it spreads our production cost. The more trees you grow the less the unit cost, so that is really an advantage. For many years we have had an agreement with the Forest Service whereby they did not establish a nursery in our area, because they depended on our nursery to supply their needs. And they also used our trees in Mississippi. TVA trees have also been used at the Arnold Air Engineering Center at Tullahoma—all of those agencies have looked to us over the years to supply trees for them, which we have done, thereby avoiding duplication.

Mr. FOGARTY. Is it cheaper for the Army engineers to buy trees from you?

Mr. KILBOURNE. I assume they get trees at the cheapest price they can. We take considerable pride in the quality of our trees. They keep coming back to us year after year, I assume, because they think it is a good arrangement.

Mr. FOGARTY. Suppose somebody in New England wanted to buy them—they could not buy them?

Mr. KILBOURNE. In the first place, we do not grow trees they want, except white pine. We grow a relatively small amount of white pine, but the major part of our trees are southern pines which do not grow in New England.

Mr. FOGARTY. You could raise some amount of white pine, though, if you wanted to?

Mr. KILBOURNE. I suppose we could if we had the money to grow them. It costs a little more to grow white pine.

Mr. FOGARTY. Is white pine worth any more after 40 years than southern pine?

Mr. KILBOURNE. Yes; it probably is. It is a very fine wood. Southern pines are used for pulp and lumber and things of that kind. White pine, of course, is a more valuable wood for interior trim and patterns and has a great variety of uses of higher value.

FUTURE OF THE PULPWOOD INDUSTRY

Mr. FOGARTY. Take, for instance, the pulp industry, 20 years from now; how will the pulp industry have been changed from what it is now? Where do we get the most of our pulp now?

Mr. KILBOURNE. It comes from a number of sources. We used to import a lot of it from Canada and even from Sweden and Norway; but since they discovered how to make newsprint and kraft paper out of southern pines, the emphasis has shifted. There is a big pulp industry in New England and up in Canada, based on spruce and fir. I do not have any recent figures on just where most of those plants are located, but there has been a tremendous increase in pulpwood production in all of the Southern States.

Mr. FOGARTY. Do you have any idea how much it will increase in the next 10 or 20 years?

Mr. KILBOURNE. No, sir. But there are some predictions on that which I would be glad to supply for you.

Mr. FOGARTY. Will you supply them for the record?

Mr. KILBOURNE. Yes, sir.

(The information requested follows:)

	Entire United States	Southern States
Estimated pulpwood requirements, by millions of rough cords:		
1952	29.5	14.5
1960	38.9	21.1
1970	48.9	26.8
Estimated lumber requirements, by billions of board-feet:		
1952	40.7	
1975	44.6	
Estimated softwood plywood and veneer requirements, by billions of square feet:		
1952	3.3	
1975	7.5	

Source: Pages 58, 59, and 76, America's Demand for Wood, 1929-75, Stanford Research Institute, 1954.

APPROPRIATIONS FOR RESOURCE DEVELOPMENT PROGRAM

Mr. PHILLIPS. I would like to ask the budget officer to give me figures as far back as he has them of the year-by-year appropriations for resource development. This year's budget asks, I think, for $1,106,000.

Mr. VAN MOL. $1 million direct cost.

Mr. PHILLIPS. I also have a figure of $1,114,000.

Mr. VAN MOL. That includes depreciation on facilities.

Mr. PHILLIPS. I think the real difference is that you have $8,000 incidental income that is deducted from the $1,114,000, which makes a net of $1,106,000.

Mr. VAN MOL. That is the total expense of the program; yes, sir. However, that includes some depreciation for facilities used in the program.

DEPRECIATION OF GENERAL FACILITIES

Mr. PHILLIPS. Before we pass depreciation, I would like to call attention to the fact you are charging a nominal $10,000 depreciation; also, in the 1954 appropriation you show $192,545; so maybe the record should show why you deduct $192,545 in a single year.

Mr. VAN MOL. I can explain that now.

Mr. PHILLIPS. Provide it for the record if it is going to be lengthy, but give me a thumbnail reason now and provide a more extended one in the record; because unless you were charging off on the basis of 20-year amortization, which would have been 18 years then, you will have a little problem of reducing it $182,500 in 1 year.

Mr. RABAUT. What is the difference?

Mr. VAN MOL. In 1954 the depreciation shows as $192,545. Some of that reflects writeoff of the undepreciated value of some boat harbors which I believe, were turned over during that year, to the local communities for operation.

Mr. PHILLIPS. How did boat harbors get into resource development and not in your navigation, or recreation funds?

Mr. VAN MOL. That question goes to the history of the resource development program.

Mr. PHILLIPS. Unless the chairman wants to hear it now, maybe you had better make it clear by a statement in the record.

Mr. RABAUT. Yes; suppose you supply that for the record and show what the difference is that has been requested.

(The information requested is as follows:)

Depreciation charges of $192,545 are broken down as follows:

Depreciation writeoff of boat harbor facilities transferred to city of Decatur, Ala	$108,972
Depreciation writeoff of boat harbor transferred to city of Guntersville, Ala	55,121
Depreciation writeoff of minerals laboratory equipment transferred to State of North Carolina	8,359
Normal depreciation charges for the above facilities and equipment for the year	7,753
Normal depreciation charges for the year for resource development facilities (tree nursery facilities, map-drafting equipment, surveying instruments, etc.)	12,340
Total	192,545

Some years ago TVA conducted activities to assist and encourage the State and local agencies in the development and use of the recreational resources which became available to the region when the TVA reservoirs were created. This work was a part of the resource development program. Earlier work which TVA conducted on the mineral resource problems of the region was likewise a part of the overall resource development activities. In recent years, TVA has withdrawn from active participation in recreation and mineral resource development. In order to encourage State and local agencies to accept responsibility for these activities, related facilities were transferred to these agencies for operation and maintenance. The undepreciated value of the facilities was charged to the program activities for which they were used.

Mr. PHILLIPS. Now if it is $1,106,000 estimated for next year, your estimate for the current fiscal year was $981,000. Is that right?

Mr. VAN MOL. Those two figures are not related. The figure that is related to the $1,106,000, in 1955 is $974,000.

Mr. PHILLIPS. Is the difference a $7,000 return—incidental income?

Mr. VAN MOL. Yes, sir.

Mr. PHILLIPS. Put in the record or tell me now what this incidental income consists of. In a million dollar outlay by TVA, $8,000 return does not seem to be very much. How do you get $8,000; from what source? Maybe Mr. Kilbourne sold some trees.

Mr. KILBOURNE. This is a budget and accounting question which I would rather not muddy up by trying to answer.

(The requested information is as follows:)

Sales of fertilizer	$7,000
Revenue from forest nursery operations	1,000
Total	8,000

EXPENDITURES FOR RESOURCE DEVELOPMENT

Mr. PHILLIPS. While you are looking that up, I have a notation that in fiscal 1954 we have the actual expenditures and that was $1.4 million in round numbers, or $1,412,161.

Mr. VAN MOL. Yes, sir. The total expense, including depreciation.

Mr. PHILLIPS. Now can you give me 1953? How far back can you go from the books you have there?

Mr. VAN MOL. I do not have the figures prior to that time readily available. It will take a minute or two to look them up.

Mr. PHILLIPS. Look up 1953 and 1952, and then go back some 10 years when you get the transcript, and put it in the transcript at that time. But give me 1952 and 1953. Give me 1953 right now, for a particular reason which I will indicate in a moment.

(The information requested is as follows:)

Direct expenditures of resource development activities are as follows:

1945	$4,208,321	1950	$4,786,903
1946	5,613,280	1951	4,197,101
1947	6,985,982	1952	1,880,506
1948	4,688,061	1953	2,037,272
1949	4,319,682	1954	1,094,142

Mr. VAN MOL. In 1953, direct expense was $2,037,272.

Mr. PHILLIPS. And in 1952?

Mr. VAN MOL. We do not have 1952 with us.

Mr. PHILLIPS. The reason I wanted to point that out is that money spent for resource development in this area has gone as high as $7 million, shall I say, was it not? Who knows?

Mr. WAGNER. I do not know. I do not recall it was that high.

Mr. PHILLIPS. It went up very high.

Mr. WAGNER. It was higher than at present.

Mr. PHILLIPS. It went up as high as $7 million and each year it was pointed out in the subcommittee that this was to a very large extent a duplication of the work done by the other agencies of the Government, or in the other 42 States of the United States, which was carried on by the State agencies, by their agricultural departments, or whatever it is called in the States, resources department, public lands, and so forth. And after 1952 and in 1953, under my distinguished colleague, Mr. Thomas, an effort was made to wean the Tennessee Valley Authority, so that in fiscal 1954 the amount was reduced to $1.4 million and a very firm statement was made by the committee that there must be a weaning process carried on immediately; that it was improper for people in the other 42 States to carry

on the same activities as out-of-pocket activities which were carried on in their States by the State chamber of commerce, State organizations, farm bureaus, Granges, farmers' unions, and all of the other organizations which were doing it at their taxpayers' expense individually. In addition, as mentioned by Mr. Kirwan about mapping the area, I think that is duplicated at least half a dozen times in the agencies of the United States, and these farm things.

Now the point I want to make is that after that I had a visit—I was the succeeding chairman to Mr. Thomas, and I had a visit from representatives of the Tennessee communities and the State of Tennessee, and the point which was interesting to me, Mr. Chairman, was they did not object too strenuously, shall I say, on the academic side. They felt they were getting a benefit which other States did not get and which other States paid for, but their request was they be given a chance to pick this up themselves. They said the legislature had a biennial session in Tennessee and if we would carry the amount they felt was the minimum upon which they could operate that year, they would do something about it in their several States.

For that reason, we put back in the Senate and in the conference $1 million—$1,412,000 which shows here.

Now, Mr. Chairman, instead of doing anything about it, this last year the other body raised the amount we appropriated to $974,000 and this year we are again on the escalator and we are up to $1,106,000.

I think that ought to be a matter of record in the committee hearings, because as you go down the list of expenditures you have agricultural resource development, which is a complete duplication of the work of the Department of Agriculture and in other States by the State departments of agriculture; you have watershed development, which is a duplication, I presume, of the Corps of Engineers; you have forest resources, which is a duplication of the Forest Service in other areas that I know; you have topographic mapping, which has already been discussed; you have overhead, and distribution of the overhead expense. And I think we are now entitled to ask these questions, Mr. Chairman, after these 3 years of advance knowledge that that work was to be eliminated rather than increased. And I point out in the hearings a year ago Mr. Clapp testified:

> In their total budgets, the seven valley States carrying on programs that run ahead of TVA are putting about $45 million into resource development activities.

And at another place he said:

> This effort to get the States to take some responsibility in this field—

that is resource development, the thing we are talking about—

> is succeeding and has been growing over the years.

Now on the basis of your own testimony in the past, there seems to be a peculiar situation in which it appears that only 3 percent of the total funds budgeted for the 7 valley States goes to this same situation. And also I do not think this points up very well this leadership in the field you have referred to in your testimony now, and in other testimony, and I will read to you from a statement on page 75 of your justifications, the third paragraph:

> * * * TVA has stimulated their growth—

referring to the development of agencies in State and local resources—

and has constantly encouraged them to assume increasing responsibilities for leadership in regional development. As other agencies take over a part or all of a project that TVA may have initiated or in which it may have been a leading participant, the Federal partner withdraws. There are many examples of this shift of responsibility during the past 21 years.

So I point out to the other members of the committee who are not as familiar with it as some of us, that this is not new, this shift of responsibility, and instead of being eliminated completely as Congress on this side of the Capitol intended, we are now starting to build up again to $1,106,000.

Now why not eliminate the entire activity?

Mr. RABAUT. Before you leave it, it says here:

There are many examples of this shift of responsibility in the past 21 years.

Why don't we put those in the record?

Mr. PHILLIPS. I think it would be excellent.

Mr. WAGNER. I think it was asked that they be put in the record this morning.

FOREST RESOURCE DEVELOPMENT

Mr. PHILLIPS. Why not eliminate the entire activity and let the Tennessee Valley area operate just exactly as the other 42 States of the Union operate?

Mr. WAGNER. Mr. Phillips, you have asked a number of questions——

Mr. RABAUT. Before you start, I want to know if there are similar activities in other States under other agencies of our Government.

Mr. WAGNER. Activities which we carry out in this field?

Mr. RABAUT. Yes.

Mr. WAGNER. We do not, I believe, duplicate activities of other agencies of the Government.

Mr. RABAUT. In your State, or all over?

Mr. WAGNER. In the Tennessee Valley. I do not know that the particular kinds of activities in our resource development program are carried out elsewhere as we perform them. Of course topographic maps are made throughout the United States. There is no duplication however, in making these maps in the Tennessee Valley.

Mr. RABAUT. The Federal Government contributes toward the Forest Service of the States, does it not?

Mr. WAGNER. That is right.

Mr. RABAUT. In the TVA Act, you are charged with the responsibility of doing this, are you not?

Mr. WAGNER. That is right. We have the responsibility for carrying out these activities defined in the act.

Mr. RABAUT. The point I am trying to make is I do not understand from Mr. Phillips this one thing: If this kind of activity is under the Forest Service in one State and under Agriculture in another, and the funds come from the same source, but in this particular area the main responsibility is charged to them under the TVA Act, I cannot quite understand it. And then, of course, another thing is if there is a request that this should be taken out and abandoned, and so forth, why did not the committee cut it out last year and abandon it?

Mr. PHILLIPS. We did, but the Senate put it back.

Mr. RABAUT. Well, you were in the conference.

Mr. PHILLIPS. The Senate put it back; that is the answer.

Mr. RABAUT. You mean the House wanted this out?

Mr. PHILLIPS. That is correct.

Mr. RABAUT. And the Senate insisted that it be kept in?

Mr. PHILLIPS. That is correct. I will answer the question you specifically ask and I think it suggests one illustration of many. Mr. Fogarty was asking about reforestation. The total amount appropriated for the reforestation program in New England and all of the other 42 States is approximately $500,000. These gentlemen before us are asking for $471,000 for reforestation in the Tennessee Valley alone. That is the answer.

Mr. RABAUT. Is that the amount under both Agriculture and the Forest Service?

Mr. PHILLIPS. That is correct.

Mr. RABAUT. $500,000 for the whole country?

Mr. PHILLIPS. That is correct; but $471,000 out of the taxpayers' money for reforestation in the Tennessee Valley alone.

Mr. RABAUT. What about the watershed treatment projects?

Mr. PHILLIPS. For that, I cannot give you the figure.

Mr. RABAUT. Does not that come into this?

Mr. PHILLIPS. Yes, but I cannot give you the figure. We asked what amount the Corps of Engineers gets this year for comparable work in the entire United States.

General VOGEL. I do not think they are really doing that kind of work, though.

Mr. RABAUT. Is your work connected with watershed protection?

Mr. WAGNER. We were doing some watershed protection work.

I would like to make some comments on those other questions that were raised. I do not know what the Forest Service's annual budget is——

Mr. RABAUT. I do not know about the Forest Service, but watershed work is away up.

Mr. PHILLIPS. You are asking for $336,000 for watershed work. I do not know what the comparable and duplicating work might be, if it exists.

Mr. WAGNER. I would like to comment on the figures you gave a moment ago on reforestation, comparing them with the TVA's forest resources budget of $471,000. The $471,000 is our total forest resource development work. It is not just reforestation. I do not know what the Forest Service's budget is for its total work, but I am sure it is several million dollars. Mr. Kilbourne tells me he thinks it is maybe $35 or $36 million a year.

Mr. RABAUT. Now based on the $471,000, what do you do?

Mr. WAGNER. The work which Mr. Kilbourne has described at some length.

Mr. RABAUT. Put it down under the different headings right now.

Mr. KILBOURNE. It is spelled out beginning on pages 84 nad 85.

Mr. RABAUT. We do not want the pages: we want the headings and the amount under each.

Mr. KILBOURNE. "Analysis of Valley Forests," $75,000; "Assistance in Sustained Forest Productivity," $129,000; "Assistance in Forest Protection," $35,000; "Reforestation," $119,000; "Assistance in Timber Processing and Utilization," $113,000.

Mr. RABAUT. Now is there any other work this sum applies to, other than this work that has been enumerated?

Mr. KILBOURNE. No, sir; not in the $471,000.

COMPARISON OF PER CAPITA FEDERAL EXPENDITURES IN THE TENNESSEE VALLEY AND IN THE UNITED STATES

Mr. WAGNER. I would like to say that disproportionately heavy Federal expenditures do not occur in the Tennessee Valley. For example, the total Federal expenditure for land and agricultural resource development programs in the United States, per member of the United States farm population, during the fiscal years 1934–53, is $1,228. The average for the 7 Tennessee Valley States is $707, about 58 percent of the national average. The latter figure includes funds TVA spends as well as the USDA in these fields of land and agricultural resource development.

Mr. PHILLIPS. I did not hear what the item was supposed to include. What is this $1,228?

Mr. WAGNER. The average expenditure for land and agricultural resource development per member of the United States farm population for the period 1934–53.

Mr. WAGNER. Those are expenditures by the United States Department of Agriculture.

Mr. PHILLIPS. I would have to have that broken down, Mr. Chairman, because, you see, there is a certain coverage of whatever the Department of Agriculture and its subsidiaries performs.

Mr. RABAUT. The coverage would be the same in both cases?

Mr. PHILLIPS. There would be a certain coverage in this area of some of the work done by TVA.

Mr. WAGNER. The $707 includes the work done by the Department of Agriculture, in the 7 Valley States, plus the work done by TVA.

Mr. RABAUT. The relationship is $1,228 to $707 per capita?

Mr. WAGNER. Yes, sir.

Mr. PHILLIPS. Could you have that broken down in the record for me, showing how you make up the $1,228?

Mr. WAGNER. Yes, sir.

Mr. PHILLIPS. That is not too far off.

Mr. WAGNER. The Treasury's net investment in water and power resources development up to June 30, 1953, is $235 per capita, in the Tennessee Valley region, against, for example $390 per capita in the alluvial valley of the Mississippi River.

If you take total Federal expenditures in the period from 1934 to 1953, in the Tennessee Valley they have been less than half the average per capita figure for the United States as a whole.

The figure is $5,430 per capita in the United States as a whole, and $2,600 per capita in the Tennessee Valley.

Mr. PHILLIPS. May I have that one broken down also?

Mr. WAGNER. Yes, sir.

(The information follows:)

The $5,430 per capita in the United States and $2,600 per capita in the Tennessee Valley region for total Federal expenditures are made up of expenditures for Federal purchases of goods, new construction, Federal transfer payments, compensation of employees, and other components of Federal expenditures reported by the Department of Commerce in National Income, 1954 edition.

The $1,228 per capita United States farm population and $707 per capita farm population in the Tennessee Valley region for land and agricultural development are made up of USDA expenditures for agricultural experiment stations, cooperative extension, research and marketing, the agricultural conservation program, and other expenditures obtained from annual budget documents of the USDA.

Mr. PHILLIPS. In the one example which I gave, even taking Mr. Wagner's own figures, the total for reforestation for the entire United States was $500,000, and in the request, without overhead, in the TVA area, it was $113,000. In this small area we are expending one-quarter as much as is spent for the other 42 States.

Mr. WAGNER. I believe there are expenditures for forestry activities in the other States of a kind which are not made by TVA.

Mr. PHILLIPS. Basically, it comes back to the question of whether we want duplication.

Our subcommittee in the past has been allergic to the creation of duplicating agencies, and I do not believe we need any better illustration than the one which Mr. Kirwan gave which is so good, and that is you have 2 people 1 year, and the first thing you know you have 200 people.

How many employees in the TVA are directly engaged in resources development?

Mr. VAN MOL. In fiscal 1955?

Mr. PHILLIPS. Well, take, for example, the request which you are making for fiscal 1956. You have it right there.

Mr. VAN MOL. In 1956, it amounts to about 95 employees.

Mr. PHILLIPS. That is, you have 95 employees engaged in this specific activity?

Mr. VAN MOL. Yes, sir.

AREA IN WHICH RESOURCE DEVELOPMENT PROGRAM IS CONDUCTED

Mr. PHILLIPS. Would it be possible for you to break down, without too much difficulty, and I suppose you would want to take the figure of $1,250,000 for 1954, as to how it was expended in the 7 States which are involved in the Tennessee Valley area?

Could you do that?

Mr. VAN MOL. I do not believe we could do that. That would be rather difficult.

Mr. WAGNER. I do not believe that would be feasible.

Mr. PHILLIPS. I think it is important that we should get from you a firm statement as to the amount of government money which is being spent in these States in those areas which are outside of what is really the Tennessee Valley area under the statute.

Mr. KILBOURNE. May I comment on that, Mr. Phillips?

Mr. PHILLIPS. Yes, Mr. Kilbourne.

Mr. KILBOURNE. The forestry program is confined to 125 valley counties.

Mr. PHILLIPS. Where are they? Are they all in Tennessee?

Mr. KILBOURNE. No; there are seven States involved.

General VOGEL. They are within the range, I think, of this map, here.

Mr. RABAUT. Are you spending any money outside of the valley?

General VOGEL. In resources development?

Mr. RABAUT. Yes.

General VOGEL. Mr. Kilbourne, do you not mean within the range of that map?

Mr. RABAUT. That is the area; is it not?

Mr. WAGNER. The resources development program generally applies to expenditures within the Tennessee Valley area itself, within the watershed, but let me explain that if we encourage a State agency in Alabama to do a more intensive job inside the Tennessee Valley, I presume that their new activity is not necessarily confined to that area. It extends over into the State as a whole. Some of our activities are carried on in conjunction with the Alabama State Planning Commission, which is a statewide agency.

Mr. RABAUT. Are you spending money for that?

Mr. WAGNER. In cooperating with the State agencies?

Mr. RABAUT. Is TVA spending money for that because this particular fellow wants to do something?

Mr. WAGNER. We have encouraged the establishment of these State agencies, and many of them have been organized and they are now doing a more intensive job in resources development than they formerly were.

Mr. Phillips, you mentioned that a year ago it was indicated that the States were spending about $45 million a year in these fields.

Mr. PHILLIPS. That was Mr. Clapp's statement.

Mr. WAGNER. I think, to add another year to that, would make it about $50 million.

Mr. PHILLIPS. Which is still only about 4 percent of the total amount being spent.

Mr. RABAUT. I have not received an answer to my question.

Mr. PHILLIPS. The answer is "Yes," Mr. Chairman.

Mr. RABAUT. The point is this: You are not spending any money if you talk to an agency to get them to do something, say, over in Alabama, which is outside of the area.

Are you spending any money to develop that program outside of TVA?

Mr. WAGNER. Well, the man who talks to the chairman of the Alabama State Planning Commission is a TVA employee.

Mr. RABAUT. I was talking about putting money into the activity.

Mr. WAGNER. On the other points which you mentioned——

Mr. PHILLIPS. Mr. Kilbourne, are you selling trees to be planted in Alabama, Georgia, North Carolina, or anywhere outside of the immediate area of the basin of the Tennessee River, or the drainage basin of the Tennessee River?

Mr. KILBOURNE. The only trees we sell, Mr. Phillips, are those to other public agencies which I named, the Forest Service, the Corps of Engineers, and agencies like that.

Where they use those trees, we do not know. They buy them and pay us our cost.

Mr. PHILLIPS. There is your answer, Mr. Rabaut.

Mr. RABAUT. No; that is not the answer. The answer is that they sell those to the agencies of the Government, or someone else, at their cost.

The point is: Are you planting trees there yourself? Are you doing that type of work outside of the valley?

Mr. KILBOURNE. No, sir; we are not, and we never have.

Mr. RABAUT. The only money which they are spending in that connection is for some one of the employees who might be talking to someone who works for the Tennessee Valley Authority?

Mr. KILBURN. That is right.

Mr. PHILLIPS. They go further than that, Mr. Chairman. I did not think this was any point of great importance, myself, but they go a great deal beyond that, because when they encourage, we will say, the agricultural commission, or the Department of Agriculture of Alabama, or Georgia, to do certain things, or to do things for them, they are in effect doing things for those two States which the other States of the United States do for themselves.

Mr. RABAUT. Does the Forest Service of the Department of Agriculture do these things for other States?

Mr. PHILLIPS. The State departments of agriculture in the various States and the Federal Department of Agriculture also does it for those States.

Mr. RABAUT. Sure.

Mr. PHILLIPS. All right but it is out of TVA funds and in duplication of the other work.

Mr. RABAUT. I do not understand it. I do not wish to belabor the point, but here is what I thought: I thought that under the TVA Act they were charged with this responsibility for this area.

Mr. PHILLIPS. That is correct.

Mr. RABAUT. I thought that similar things which they are charged with here and which we are talking about now, are done by other agencies of our Government, including the Forest Service and the Department of Agriculture, for other States, only they do not have a TVA.

So, it is done through different agencies of the Federal Government in the other States.

That was my thought on this. If I am wrong, I want to be corrected.

Mr. PHILLIPS. You are essentially right, except for the fact that there is a duplication of coverage.

Mr. WAGNER. Mr. Phillips, I have said before that we think that there is no duplication.

Mr. PHILLIPS. We will say, especially in the last 3 years, since this has been a very moot question before the subcommittee, and upon which we have taken a stand several times, just what effort has the TVA made to get the seven valley States to take over the responsibility for their own resources development work?

Mr. WAGNER. They are constantly taking an increased degree of responsibility for that, as exemplified by the number of dollars which they have expended in these programs.

Mr. PHILLIPS. All you showed was a $5 million increase.

Mr. WAGNER. The increase in 1 year was $5 million.

Mr. PHILLIPS. And out of $1.5 million of last year, that is not very much, is it?

Mr. RABAUT. I am going to somewhat agree with you on that. I think, maybe, they could do it, and they should do it, but the fault is with us, and unless that section of the act is repealed, there is no reason for them to do it.

Mr. PHILLIPS. Mr. Rabuat, there is a very simple method of doing it without repealing the act.

Mr. RABAUT. I know; you can take the money away from them, but the point is they are traveling on their own if they keep on doing it, because they have the power of the act behind them.

Mr. WAGNER. Mr. Chairman, we think this is a very effective part of our total program for getting the resources of that region developed. We have said that many times before this committee, I am sure.

Mr. PHILLIPS. On this matter of resources development, I have one final question:

Mr. Kilbourne showed us this map, and these are all similar cases, and that means they are all lumber companies of one kind or another.

Is it not a fact that in the other parts of the United States which are recognized as timber areas, that a great deal of this reforestation is done nowadays at the expense of the lumber company?

Mr. KILBOURNE. I am afraid I did not get your question.

Mr. PHILLIPS. In the other areas of the United States, is not much more, or a great deal of this reforestation work, done at the expense of the lumber companies who do their cutting over the land, and make a profit by cutting over the land?

Mr. KILBOURNE. That is correct.

Mr. PHILLIPS. Mr. Chairman, I had only two other questions.

Mr. KILBOURNE. Mr. Phillips, I would like to add that in the valley there is a different condition. We have very few large companies, compared to the ones with which you are familiar in California. Most of the companies and most of the lumber business in the valley is made up of small operations—one small circular mill—and very few of them own their own timberland, for example—relatively few in relation to the number.

Mr. PHILLIPS. Mr. Kilbourne, someone owns it.

Mr. KILBOURNE. Yes; it is mostly owned by farmers.

Mr. PHILLIPS. If someone has 100,000 trees, and if he cuts 100,000 trees, he has to plant 100,000 saplings, and the same is true if a man owns 10 acres of land and cuts 10 trees, he has to plant 10 trees to replace them.

It works out just the same, no matter whether he is small or big. He has a relative cost, and a relative obligation, and I do not think his obligation is inherent upon the United States.

Mr. KILBOURNE. At places where the companies are doing the thing you speak of, the large companies of which we now only have one in the valley, the Bowaters Paper Mill, they are buying trees and planting them on their own land.

Mr. PHILLIPS. But, you do not think, Mr. Kilbourne, that that has been done over the years. I think in Mr. Magnuson's State there is more of it in California—you referred to California—and you do not think that was done voluntarily for them; do you? There was a lot of effort on the part of these people, and on the part of the State, and I am suggesting the same effort in Tennessee would have produced the same results.

Mr. KILBOURNE. That is the only answer I could give to that.

Mr. PHILLIPS. Mr. Chairman, the only other questions I have are not directly on the matter of resources development. So, if there are other questions, I will yield at this time.

Mr. JENSEN. In line with the colloquy which has been going on, I am interested in knowing if there are any private nurseries in the Tennessee Valley.

Mr. KILBOURNE. There are some nurseries which produce ornamental trees and fruit trees. There are no private nurseries in the valley which produce forest trees, the type of trees which we raise.

Mr. JENSEN. They could produce them if they had an opportunity, and could then sell them at a reasonable profit. Of course, I can understand why there are no nurseries now in the Tennessee Valley for selling trees, when you sell them for 55 cents a hundred, or $5 per thousand.

Mr. KILBOURNE. The figure is $5 per thousand, or 55 cents per hundred.

Mr. JENSEN. Well, I can understand why there are no nurseries producing trees, other than fruit trees.

Mr. KILBOURNE. May I comment on that?

Mr. JENSEN. Yes.

Mr. KILBOURNE. Before TVA went into the business of producing trees, we spent considerable time trying to find the trees which we needed. We went to some of the larger nurseries in an effort to get them to produce forest tree seedlings, and we struggled along for 2 or 3 years with an undependable supply, and very poor quality of trees.

We found that one company was going out into the woods and pulling up wild seedlings, and selling those to us.

Mr. JENSEN. Did you not have knowledge of the fact that there were nurseries in the United States in other States where you could buy these trees? Or did you know about that?

Mr. KILBOURNE. There were none in the valley.

Mr. JENSEN. I am not talking about the valley. I am talking about the other States which have a financial interest in the Tennessee Valley.

Mr. KILBOURNE. The pertinence of the valley——

Mr. JENSEN. Or, have you fully made up your mind that you are simply not going to buy anything from private nurseries in other States?

Mr. KILBOURNE. No, sir; the point is, Mr. Jensen, that the States in which the nurseries to which you refer are located, are not climatically situated where they can produce the kind of trees which we need in the valley.

Mr. JENSEN. Now, wait a minute. That is a very broad statement. I do not think you want to leave that on the record, even.

Mr. RABAUT. Off the record.

(Discussion off the record.)

Mr. JENSEN. It is just another case where TVA simply is not going to give private industry an opportunity to take part in anything in that area if they can help it. Everything points to that fact.

Do the States in the Tennessee Valley appropriate moneys for forestry development, as do the other States of the Union?

Mr. KILBOURNE. Yes, sir.

Mr. JENSEN. To what degree?

Mr. KILBOURNE. Well, I have some figures here which I think will be helpful.

Mr. JENSEN. All right; furnish them for the record.

Mr. KILBOURNE. Very well, sir.

(The information is as follows:)

In 1955, forestry budgets for the seven valley States total some $9 million derived from State, county, and private funds.

SOIL CONSERVATION SERVICE ACTIVITY IN AREA

Mr. Jensen. Now, we know the value of commercial fertilizer and we also know that without proper soil and water and moisture conservation, that we would not get very far with the improvement of our soil, even with these new commercial fertilizers.

Now, my question is: Does the Soil Conservation Service have soil conservation districts in the Tennessee Valley, as in the other States?

Mr. Kilbourne. Yes, sir.

Mr. Jensen. In all of the counties?

Mr. Kilbourne. No; I would not say that all of the counties are in soil conservation districts, but there are soil conservation districts in the Tennessee Valley area.

I do not know how many there are as of the present time.

Mr. Jensen. Well, I think about 95 percent of all the counties in America now are organized in the soil conservation districts, and most of them are county soil conservation districts.

I presume that the other 5 percent, and many of them, or at least some of them, are in the Tennessee Valley, which are not organized into the soil conservation districts.

Does the Tennessee Valley Authority cooperate with the Soil Conservation Service, the regular organization which knows more about conservation, and conserving our soil and moisture resources, than anyone else in America, or any group, including the TVA officials?

Mr. Kilbourne. Do you want to answer that question, Mr. Wagner?

Mr. Rabaut. Do you cooperate fully?

Mr. Wagner. Mr. Chairman, we do cooperate with the Soil Conservation Service; yes, sir.

Mr. Jensen. To what degree? Just how do you?

Mr. Wagner. The Soil Conservation Service has districts in counties in the various areas. The farmers there form them as they do elsewhere.

In some of these projects which you have mentioned, the Soil Conservation Service technicians assist in their usual manner in working out plans on farms upon which our fertilizers are used, and in similar ways.

Mr. Jensen. But, you do not know how many districts are organized in the Tennessee Valley watershed?

Mr. Wagner. No, sir; I do not have that information.

Mr. Jensen. I will ask you to furnish it for the record.

Mr. Wagner. All right, sir.

(The information requested follows:)

There are 80 soil conservation districts in the 125 valley counties.

BACKGROUND OF MR. KILBOURNE, DIRECTOR OF FORESTRY RELATIONS

Mr. Rabaut. Mr. Kilbourne, what are your qualifications in this field?

Mr. Kilbourne. I had rather you would ask someone else for that information, Mr. Chairman.

Mr. Rabaut. No; I am asking you, and I want it in the record.

Mr. Kilbourne. Well, I have a bachelor's degree, with a major in chemistry and a minor in physics, and I have a masters' degree from the Yale School of Forestry.

I worked for the Western Electric Co. in lumber research for about a year. I worked in the State of Tennessee for about 3 years, and the State of Maryland, in a combined job, as extension forester and assistant State forester, for approximately 3 years, and have been with the Tennessee Valley Authority since November 1933, with the exception of 3 years, which I spent with the United States Marine Corps. I have served in the Authority as the Assistant Section Chief and as Branch Chief, as we now call it. I was Branch Chief prior to the War. I was Assistant Director of the Division since 1946 and since about May 1 of last year, I have been Director of the Division.

Does that answer your question, sir?

Mr. RABAUT. Yes. I would say you would be pretty well qualified to know about these matters; would you not think so?

Mr. PHILLIPS. Yes; I would.

Mr. JENSEN. Mr. Chairman, I think all of these men are well qualified to run their government down there, and to run that empire.

Mr. RABAUT. I would like to get some advice from them about that Michigan pine which was placed out here.

Mr. JENSEN. Since you mentioned that, Mr. Chairman, while I was sitting here, I jotted down a statement in which I took the personnel which is here today, and their particular job, and listed what came to my mind as I listened to all these gentlemen yesterday and today.

The Tennessee Valley empire, as organized and administered, governed and controlled, is handled by the following people as counterparts of our United States Government officials:

Gen. Herbert D. Vogel's title as Chairman of the Board of Directors, holds the counterpart position in our United States Government of the President of the United States.

Dr. Harry A. Curtis, as another member of the Board, is the first vice president.

Dr. R. R. Paty, director, is the second vice president.

A. J. Wagner, general manager, is the prime minister.

G. O. Wessenauer, manager of power, is the secretary of the interior for this TVA empire.

R. A. Kampmeier, assistant manager of power, is the under secretary of the interior.

Joseph C. Swidler, general counsel, is the attorney general.

George K. Leonard, chief construction engineer, is comparable to our Chief of the United States Army engineers.

Charles Young, manager of chemical engineering, is the Chief of the Bureau of Mines.

Harry W. Case, director of personnel, is the civil-service director for the TVA empire.

Richard Kilbourne, director of forestry relations, is the director of forestry.

L. J. Van Mol, chief budget officer, is the budget director for the TVA empire.

L. E. Ellis, budget staff, is the secretary of the treasury of the TVA empire.

Marguerite Owen, Washington representative, is the ambassador to Washington, D. C., from the TVA empire.

Now, the only conclusion I can come to is that here we have a counterpart or the counterparts of the United States Government

running this empire—autocratic empire—within our great United States Government.

Why should TVA employees all be outside the jurisdiction of the Civil Service Commission? Is there anyone here who desires to try to answer that one?

Mr. RABAUT. Yes; it is in the act.

Mr. PHILLIPS. It is in the act because Congress put that provision in when Congress set up the TVA.

Mr. JENSEN. I knew that would be the answer.

Mr. RABAUT. It is an organization which we all built.

Mr. JENSEN. I knew the answer, and that is why I have said over and over again that the TVA Act was all-inclusive for the administration of this great empire.

General VOGEL. Mr. Jensen, Mr. Case has been sitting here for 2 days, and has not gotten his name in the record. Perhaps he would like to tell you about it. He is Director of Personnel.

Mr. JENSEN. I would like to listen to all of them. I think they are very able gentlemen.

I hold no brief against any of these gentlemen, at all, but I reserve the right for my own opinions just as they do, and I would fight to the last drop of my blood to see that they have their right to be heard.

So, if anyone wants to comment, go ahead.

Mr. PHILLIPS. If the gentleman will yield, I think Mr. Case really ought to be on the record in supplement to what Mr. Wagner said the day before yesterday to the effect that the reason their average wage rate is so high in TVA is because of their method of contracting for the lower grades of labor.

Mr. RABAUT. Let us not start on this personnel item as yet.

Mr. PHILLIPS. I have one additional question, Mr. Chairman, on power.

Mr. Chairman, may I go back briefly to carry out a question which I asked yesterday?

Mr. RABAUT. Yes.

ESTIMATES OF PEAK LOADS OF TVA POWER

Mr. PHILLIPS. Yesterday I suggested in a sort of interpolation with the questions being asked by another member of the subcommittee that the estimates made by the TVA as to the amount of power which was going to be needed was not always accurate in the past, and that was not made as any attempt at a derogatory statement, but just as a statement of fact. It relates very much to the amount of money which this committee has to appropriate, because on the basis of that, we try to keep you supplied with the amount of generating power you need, but not too much.

So, will someone write these down, and then put the answers in the record?

What is the peak carrying capacity of the TVA system?

Mr. WESSENAUER. As of what date?

Mr. PHILLIPS. Well, say, as of 1954. That is the most recent report, I suppose.

Mr. WESSENAUER. As of the end of calendar year 1954, the peak carrying capacity was 6,248,000 kilowatts.

Mr. PHILLIPS. 6,248,000 kilowatts? Can you bring it up to date? I want them all alike. Let us take as of the end of 1954. You had, then, 6,248,000 kilowatts?

Mr. WESSENAUER. Yes, sir; that is right.

Mr. PHILLIPS. How much of that was hydro?

Mr. WESSENAUER. Well, sir, I do not have the load-carrying capacity broken down between hydro and steam. I can give you the installed capacity between the two.

Mr. PHILLIPS. Give me, as nearly as you can, the figures, and you may state that it is an estimate based upon the installed capacity.

Mr. WESSENAUER. Well, it was about half and half at that time.

Mr. PHILLIPS. This is important. What was the peak load on the TVA system in calendar year 1954?

Mr. WESSENAUER. The peak load which we were able to carry in calendar year 1954 was 6,325,000 kilowatts.

Mr. PHILLIPS. What are your estimated peaks for 1955, 1956, 1957, and 1958?

Mr. WESSENAUER. I might say with respect to the peak of 6,325,000 kilowatts, that it does not represent the demand at that time, because we were unable to supply all the requirements as of that date.

Mr. PHILLIPS. All right; I will come to that in a minute.

Mr. WESSENAUER. The estimated peak requirement for 1955 is 8,800,000 kilowatts; for 1956, 9 million; 1957, 9.8 million; 1958, 10.6 million.

Mr. PHILLIPS. The reason I asked that, Mr. Chairman, is because I would like to have inserted in the record here these tables which have been compiled. These are from a letter from the Federal Power Commission as their statement of fact, as to the amount used, and so forth.

Mr. RABAUT. In past years?

Mr. PHILLIPS. Yes.

In December 1952 TVA estimated the peak load for December 1954—that is, the figure which we were just talking about—as 7,950,000. In December 1953, a year later, the TVA estimated it at 7.6 million. In June of 1954 they estimated it at 7,350,000.

Last October, and this is the estimate for the amount they would need in December, it was 7,150,000, and according to the figures in the Federal Power Commission, the load for December was 6,325,000, and Mr. Wessenauer has just given me the figure of 6,248,000 as of December.

Mr. WESSENAUER. I gave you the same figure for the load carried of 6,325,000 kilowatts.

Mr. PHILLIPS. Yes; it is the same amount that they used, but not the same amount which they had estimated.

Mr. RABAUT. It would be very difficult to estimate it.

Mr. PHILLIPS. Wait a minute, Mr. Chairman.

Mr. RABAUT. It is all right to put those tables in the record.

Mr. PHILLIPS. But it is not all right to take it for granted, because here in October, 3 months before, they estimated it at a figure of 800,000 high. The point is when the TVA comes in and says that for a year from now they are going to need 8.8 million, and about 7 months from now they will need 8.8 million, and a year and a half from now they will need 9 million, it should be watched very closely.

On the basis of the statement of this witness, they are not going to need it, because here is what they estimated on the same basis for December 1950, 1951, 1952, 1953, and 1954.

I would like to have these tables placed into the record.

(The tables referred to follow:)

TVA-Alcoa system, peak loads and estimates of peak loads

	Kilowatts
Actual annual peak load for December 1954	6, 325, 000
October 1954 estimate of December 1954 peak load	7, 150, 000
June 1954 estimate of December 1954 peak load	7, 350, 000
December 1953 estimate of December 1954 peak load	7, 600, 000
December 1952 estimate of December 1954 peak load	7, 950, 000
Actual annual peak load for December 1953	5, 057, 000
October 1953 estimate of December 1953 peak load	5, 300, 000
June 1953 estimate of December 1953 peak load	5, 450, 000
December 1952 estimate of December 1953 peak load	5, 600, 000
December 1951 estimate of December 1953 peak load	5, 800, 000
Actual annual peak load for December 1952	4, 121, 000
October 1952 estimate of December 1952 peak load	4, 400, 000
June 1952 estimate of December 1952 peak load	4, 700, 000
December 1951 estimate of December 1952 peak load	4, 880, 000
December 1950 estimate of December 1952 peak load	4, 250, 000
Actual annual peak load for December 1951	3, 677, 000
October 1951 estimate of December 1951 peak load	4, 000, 000
June 1951 estimate of December 1951 peak load	4, 000, 000
December 1950 estimate of December 1951 peak load	3, 860, 000
December 1949 estimate of December 1951 peak load	3, 450, 000
Actual annual peak load for December 1950	3, 008, 000
October 1950 estimate of December 1950 peak load	3, 180, 000
June 1950 estimate of December 1950 peak load	3, 100, 000
December 1949 estimate of December 1950 peak load	2, 950, 000
December 1948 estimate of December 1950 peak load	2, 900, 000

Data on operations of TVA-Alcoa system for years 1950 to 1954

[Thousands of kilowatt-hours]

Year	Net generation			Energy purchased or received from other systems
	Hydro	Steam	Total	
1950	15, 811, 918	1, 934, 224	17, 746, 142	1, 325, 224
1951	14, 598, 331	3, 189, 683	17, 788, 014	3, 340, 394
1952	13, 961, 062	7, 064, 946	21, 026, 008	3, 900, 880
1953	13, 826, 447	13, 297, 492	27, 123, 939	3, 217, 771
1954	12, 539, 688	22, 179, 414	34, 719, 102	4, 244, 343

Year	Energy deliveries				Total
	Federal establishments	Non-Federal public utility systems	Industrial plants	Other	
1950	1, 681, 923	9, 522, 195	4, 256, 488	2, 662, 549	18, 123, 155
1951	3, 121, 607	9, 949, 903	4, 729, 778	2, 364, 311	20, 165, 599
1952	5, 951, 923	10, 758, 906	4, 659, 223	2, 371, 857	23, 741, 909
1953	8, 960, 251	12, 212, 604	5, 506, 892	2, 219, 598	28, 899, 345
1954 [1]	16, 048, 397	13, 345, 596	5, 641, 971	2, 270, 607	37, 306, 571

[1] Preliminary.

Annual generation in kilowatt-hours for the calendar years 1950 to date (combined TVA system)

Calendar year	Steam	Hydro	Total
1950	1,934,224,048	15,811,917,810	17,746,141,858
1951	3,189,682,770	14,598,331,514	17,788,014,284
1952	7,064,946,080	13,961,062,075	21,026,008,155
1953	13,297,491,810	13,826,447,325	27,123,939,135
1954	22,179,414,420	12,539,687,491	34,719,101,911

Estimated annual potential hydroelectric output

[In billions of kilowatt hours]

Calendar year	Median water conditions	Adverse water conditions
1954	16.8	12.5
1955	16.9	12.6
1956	17.3	12.9
1957	17.6	13.1

Expected capacity value of system hydroelectric plants for serving the system load [1]

[Kilowatts]

Calendar year	Median water conditions	Adverse water conditions
1954	3,308,000	3,108,000
1955	3,373,000	3,173,000
1956	3,439,000	3,239,000
1957	3,536,000	3,336,000

[1] Without deducting any allowances for operating reserves.

Maximum capability of TVA steam plants for serving the system load [1]

Calendar year:	*Kilowatts*
1954	3,584,000
1955	6,434,000
1956	6,934,000
1957	6,934,000

[1] Without deducting any allowances for operating expenses.

Mr. RABAUT. Mr. Wessenauer, would you like to see those tables?

Mr. WESSENAUER. May I comment on this, Mr. Chairman?

Mr. RABAUT. Yes; you surely can.

Mr. WESSENAUER. These, sir, are not my papers.

Mr. PHILLIPS. They are papers of the Federal Power Commission. The chairman wants you to comment on those.

Mr. WESSENAUER. I would like to comment on the remarks which Mr. Phillips made. The estimates which we submitted were our best judgment of the requirements for power.

Mr. PHILLIPS. Mr. Wessenauer, we are not questioning that a bit. We are just saying that you made an estimate and that each year that estimate turned out safely on your side, more than you needed.

Mr. RABAUT. He made an estimate, and let him answer.

Mr. WESSENAUER. If I may have a few minutes, the record will show that the contrary of the implications of the information which you are submitting, in terms of the estimate of power requirements, is true.

Our peak-load requirements in this last winter of 1954 were 7,658,000 kilowatts in December and later in February were 7,839,000 kilowatts. We were unable to carry 7,658,000 kilowatts in December, because the capacity was not available to supply that load, and we were able only to handle the 6,325,000 kilowatts. I think the 7,839,000 kilowatts of actual requirements is very close to the estimates which we submitted. It is within 1½ percent of the estimate reported in December 1952, which Mr. Phillips cited. We have more frequently underestimated than overestimated the long-term power requirements. As a matter of fact, in 1951, when we first presented testimony to the appropriations committee as to the needs for power in calendar year 1954—and that was the time it was necessary to start new projects if they were to be completed in time to meet the requirements—our estimates, I am sad to say, were only 6,100,000 kilowatts. What has turned out in the intervening time has been that the loads have increased so that our estimate as of that date was too low, and we subsequently had to increase the estimates of the requirements, which I think is what this committee should be judging—the power requirements, rather than the limited load that could be supplied with the available capacity.

The increase in requirements in that case, from our estimate of 6,100,000 kilowatts when appropriations were requested, to some 7,800,000 kilowatts was due to expansion of AEC loads. Those loads could not be supplied fully because the need for new generating capacity could not be foreseen in time to have it all in operation. The transmission lines into Oak Ridge and Paducah were loaded to capacity, and that was the limit of what could be done.

It might be added that the increasing certainty that such would be the case was the reason for the drop in the successive December 1953, June 1954, and October 1954 estimates of the load the TVA system would carry at the coming winter peak, which differed to that extent from estimates purely of peak load requirements.

If a system such as this is to meet its requirements, we should be provided more capacity and not less than is needed.

We have failed in this last year to meet all the requirements of the system, which certainly is the best test of whether enough capacity was provided.

Mr. PHILLIPS. That is what I understand, and that is all a statement of fact, Mr. Chairman, but I want you to understand the policy involved in it, because I want to know from Mr. Wessenauer what portion of the TVA peak load requirements are interruptible, and can be curtailed, under your contracts, at the time of the peak.

Mr. WESSENAUER. I do not recall the exact figure, sir.

Mr. RABAUT. You can give an estimate of it here, and then place the correct figures into the record.

Mr. WESSENAUER. I will give an estimate now, but I would like to correct it to the exact figure. I think it is in the neighborhood of 400,000 kilowatts. That is normally interruptible.

Mr. PHILLIPS. Then, you see, the committee is entitled to know whether in your estimate for future need of power you include in those

estimates, which I think you probably do, this nonfirm load, or this interruptible load for which you contract, but which you do not have to deliver under certain conditions?

Mr. WESSENAUER. We do include it in the estimate of the total requirement, because most of those interruptible loads are for such industries as the aluminum and chemical industries, We will find ourselves in situations where they will want to buy supplemental power to replace the interruptible power, and while it is not always possible to do so, it may be very important to the national defense to be able to do so.

The interruption rights are limited in character. So, that is another reason why it is not always possible to cut off all the interruptible power, but we do make use of those contracts in order to give added protection to the firm loads of the system.

Mr. PHILLIPS. Then, answer two more questions for me, and this will conclude it:

I would like to have a list of the individual customer load reductions which you made, as indicated by the corrections on the peak requirement figures for 1953 and 1954, which you sent to Mr. Taber, and I quote from that:

> Requirements of customers for load reduction due to drought, strikes and shortages of generating capacity.

I think the committee is entitled to know just exactly where those reductions were made, and the customers you reduced.

Mr. WESSENAUER. Yes, sir; I can do that.

(The information requested follows:)

	Winter of 1953 (December 1953)	Winter of 1954	
		December 1954	February 1955
	Kilowatts	*Kilowatts*	*Kilowatts*
Total power requirements	5,411,000	7,658,000	7,839,000
Load reductions:			
Aluminum Company of America	65,000	90,000	90,000
Pittsburgh Metallurgical Co	35,000	21,000	
Victor Chemical Works	16,000	47,000	
Monsanto Chemical Co		68,000	
National Carbide Co		32,000	34,000
TVA Chemical Plant		37,000	
Total reductions	116,000	295,000	124,000
Load awaiting completion of Shawnee and Kingston units:			
Oak Ridge		497,000	468,000
Paducah		541,000	295,000
		1,038,000	763,000
Peak load supplies	5,295,000	6,325,000	6,952,000

Mr. PHILLIPS. Why did you buy 514,000 kilowatts from outside sources at the time of your peak, which would be December 20, 1954, when your hydro plants were carrying 618,000 kilowatts less load than the capability reported?

Mr. WESSENAUER. Well, as you know, last year was a very dry year, while the capabilities which we report are average capabilities.

But I believe the figure may be of load supplied with the hydro, and not their capabilities.

Mr. PHILLIPS. Do you not think, Mr. Wessenauer, that the TVA operation of its reservoirs were such that insufficient water was being held back to permit the production of the reported capability for carrying the load in December 1954?

In other words, should the system's hydro capabilities be reduced below that presently being reported?

Mr. WESSENAUER. No, sir; I do not believe so, and I will explain why.

In the first place, there were some very urgent circumstances last year which dictated pulling down the reservoirs. We were trying, with all possible means to maximize the amount of power to be available to the Atomic Energy plants at Oak Ridge, and Paducah. Secondly, it was a very dry year.

Mr. PHILLIPS. I do not think that is supported by your figures.

Mr. RABAUT. General Vogel, do you concur in that?

General VOGEL. Yes, sir.

Mr. PHILLIPS. In calendar year 1954, the median conditions were 3,308,000, and the adverse conditions were down to 3,108,000.

I am quoting, Mr. Chairman, from the TVA's own report of the expected capacity of the system's hydroelectric plants for serving the system in kilowatts. In 1955 it was 3,373,000, and 3,173,000; in 1956 it was 3,439,000—that is your estimate—and the adverse is 3,239,000; in 1957 your estimate is 3,536,000 and again a reduction of 200,000.

Do you believe that a reduction shown here of only 200,000 supports your statement in defense of a loss of 618,000 kilowatts; because I do not?

Mr. WESSENAUER. I would like to look over those figures, sir.

Mr. PHILLIPS. They are your figures.

Mr. WESSENAUER. Well, I mean to study them out, and give you a considered reply to those questions.

Mr. PHILLIPS. That is satisfactory, Mr. Rabaut, if you want to put it in the record.

Mr. RABAUT. All right.

(The information requested follows:)

Stated as simply as I know how, TVA had insufficient steam capacity last winter to permit full use of available hydro capacity in carrying its load. Because of insufficient steam generated energy, exceptionally heavy use of stored hydro energy was necessary. This withdrawal of stored water in a year of extreme drought resulted in drawing some reservoirs below usual minimum levels with an accompanying loss of hydro capability of some 70,000 kilowatts.

The details of this development are much more complicated. I will try to cover briefly the main points. TVA's loads were heavy because of the large amounts of interim power needed for the Atomic Energy plants. This load, with its effects aggravated by drought, made it necessary not only to use TVA steam energy and to obtain large amounts of power from other systems, but over and above all that to sacrifice the use of hydro for peaking in order to draw additional kilowatt-hours out of the storage reservoirs.

This procedure was called for because the power supply problem last winter was even more critical from the standpoint of an energy supply than in terms of a deficiency in capacity.

If TVA had had enough steam capacity to fulfill the AEC's needs for very large amounts of power plus enough steam to firm up the hydro supply, the hydro could have been used to its full capability during the daytime hours of peak load. Without that much steam power available it was necessary for much of the hydro, as well as all the steam, to be operated day and night to keep the transmission lines into Oak Ridge loaded around the clock. However, if the hydro plants are operated continuously, instead of primarily during daytime peak-load hours as they normally should be, there is not enough water available, especially in a year as dry as 1954, to keep more than part of their capacity in use. The rest of the capacity is there, ready to run, but without enough water available for it to operate regularly. That was the situation last winter.

In the effort to supply the greatest possible quantity of energy to Oak Ridge, TVA deliberately drew some reservoirs consideralby lower than the minimum levels that would be desirable if peak-load capacity were the controlling consideration. In this way transmission lines into AEC loads at Oak Ridge and Paducah were loaded to top capacity permitting maximum power supply to these installations. The full requirements of AEC's completed facilities could only be met with completion of additional units under construction at Shawnee and Kingston.

Administrative and General Expenses

Mr. Rabaut. We will insert page 107, and the table on page 117 of the justifications into the record at this point.

(The pages are as follows:)

Schedule B–5.—*Administrative and general expenses (for fiscal years ending June 30, 1954, 1955, and 1956)*

	1954 actual	1955 estimate	1956 estimate
Expenses:			
Board of Directors	$88,918	$92,000	$93,000
Office of the General Manager	120,322	130,000	130,000
Budget staff	83,594	88,000	89,000
Government Relations and Economics Staff		138,000	100,000
Washington office	46,521	49,000	50,000
Information office (including technical library service)	239,514	246,000	175,000
Division of Personnel	847,577	881,000	800,000
Division of Finance	1,259,320	1,315,000	1,280,000
Division of Law	291,853	306,000	306,000
Division of Property and Supply	541,812	569,000	569,000
Operation of medical and safety service units	447,514	524,000	487,000
Other administrative and general expenses	43,725	59,000	63,000
Undistributed (contingency)			100,000
Total expenses	4,010,670	4,397,000	4,242,000

Distribution of administrative and general expenses

	1954 actual		1955 estimate		1956 estimate	
	Appropriated	Corporate	Appropriated	Corporate	Appropriated	Corporate
Navigation, flood control, and power program:						
Assets	$1,559,338	$332,582	$1,632,000	$432,000	$1,100,000	$667,000
Expenses:						
Navigation operations	16,251		17,000		9,000	
Flood control operations	4,402		8,000		8,000	
Power operations		1,118,689		1,280,000		1,450,000
Multipurpose reservoir operations	121,998	81,331	138,000	91,000	140,000	94,000
Total expenses	142,651	1,200,020	163,000	1,371,000	157,000	1,544,000
Fertilizer and munitions program:						
Assets	23,987		21,000		25,000	
Expense of fertilizer and munitions development	88,410	304,027	84,000	359,000	90,000	375,000
Resource development program:						
Expense of resource development	62,737	62,737	42,000	62,000	42,000	62,000
General service activities:						
Assets	10,978		5,000		9,000	
Expense of reimbursable services:						
Working funds		98,816		126,000		156,000
Other		124,387		100,000		15,000
Total distribution by funds	1,888,101	2,122,569	1,947,000	2,450,000	1,423,000	2,819,000
Total distribution	4,010,670		4,397,000		4,242,000	

(A statement on administrative and general expenses follows:)

The foregoing pages present budget estimates for TVA program activities. This section discusses the cost of functions which are common to and performed for the benefit of all phases of program work. Charges of this nature, called administrative and general expenses, include the cost of executive direction and central management and the expense of providing personnel, fiscal, legal, medical, safety, and other management services which are performed on a centralized basis in the interest of overall program economy and efficiency.

The workload involved in providing these services is influenced by the wide variety of TVA's work—construction, navigation operations, flood-control operations, power operations, multipurpose reservoir operations, fertilizer and munitions development, resource development. Each of these programs has distinct and, in many cases, widely divergent requirements for management services. Personnel services supply the manpower; fiscal services set up and audit all the accounts, keep the books, pay the bills and the payrolls; medical and safety services screen applicants for physical ability to do the work and protect them from injury on the job.

TVA's program activities are spread throughout the valley area of about 41,000 square miles and a power service area of over 80,000 square miles lying in 7 States. Of the total 23,000 employees at the present time, about 7,600 are stationed in Knoxville and Chattanooga, Tenn., and Wilson Dam, Ala. An additional 11,600 are located at the 7 major steam-plant sites, and the remainder, about 3,800, are assigned at widely scattered points in groups varying from 10 or so to several hundred. This geographical dispersion of work location introduces added workload in the provision of management services which does not occur where operations are centered in one relatively compact location.

The 1956 estimate for administrative and general expenses is $4,242,000; the current year budget is $4,397,000; actual 1954 expenditures were $4,010,670. Accounting reclassifications constitute $138,000 of the total increase in 1955 over 1954. Certain costs of the Government Relations and Economics Staff, formerly charged to program activities, have been transferred to administrative and general expenses; the statutory limitation on the 1955 resource development budget has been reduced by the amount ($133,000) reclassified from that program. The other changes in 1955 over 1954 occur principally in the costs of the management services divisions and reflect the level of workload needed

to supply services for continuing construction activities and steadily increasing power operations work. In 1956 the total estimate is $155,000 below the 1955 level; a total reduction of $255,000 is made in the estimates for the management services divisions. This is partially offset by the undistributed contingency of $100,000.

Schedule B–5 shows estimates for the various organizational units whose work is charged to administrative and general expenses. The costs of the central management offices—the Board of Directors, the Office of the General Manager, the budget staff, and the Washington office—are relatively fixed; only minor changes occur in various objects of expenditure from year to year. Charged to these accounts are the salaries of the principal management officers and of their specialized staff assistants; also included are related secretarial, travel, space, and other expenses.

As previously mentioned, the inclusion of the cost of the Government Relations and Economics Staff represents a reclassification of charges from other budget categories to administrative and general expenses. Planning, administration, and review of the integrated regional development program for which TVA is responsible requires that the Board, the General Manager, and division heads be supplied with analyses of regional condition, events, and trends; that a staff be available for coordination of regional development programs; and that personnel be provided to give technical assistance to State and local agencies. The Government Relations and Economic Staff in the Office of the General Manager provides research, liaison, and consultation services to accomplish these purposes. The work of this staff was formerly of such extent and nature as to constitute direct program activities; work of this type was concluded at the end of fiscal year 1954 and the residual functions are now general in character and performed as a staff aid to the conduct of all primary programs of TVA. The Government Relations and Economics Staff makes periodic reports on economic and industrial conditions in the valley. Special economic studies are made from time to time to furnish the Board of Directors and the General Manager with data needed for program planning. The staff assists the General Manager is assessing programs involving several TVA divisions. It represents the General Manager in providing assistance to groups outside TVA that are concerned with regional development problems. The staff works closely with State and local planning agencies and is now engaged in analyzing problems associated with the orderly transfer of some regional development activities from TVA to the Valley States.

The costs of the management service divisions and of operating medical and safety service units, while not determined entirely by the volume and nature of program activities, do change from time to time in response to program needs. At the present time, the workload of management services and the cost of providing them is significantly influenced by a continuing heavy construction program and rapidly increasing power operations activities. In the past year 11 generating units with a total rated capacity of 946,000 kilowatts were added to the system. This is slightly less than the 1,145,600 kilowatts placed in operation in fiscal year 1953. Still under construction are 3,778,000 kilowatts more. This means that the services peculiar to construction work must continue to be provided and new services must be added for the operation of the facilities as they are completed. This situation will continue through a major part of 1956; toward the end of that year the added services related to operating the completed power facilities will substantially replace those which serve the construction work. The specific application of this trend to selected management services is discussed below.

Personnel services will be needed to meet the staffing requirements by types of employment which are summarized below:

	1954	1955	1956
Salary policy employment (white-collar work)	7,142	7,419	6,583
Annual trades and labor employment (blue-collar work: mostly power operations and chemical operations)	4,676	5,378	5,744
Total annual employment	11,818	12,797	12,327
Temporary employment (mostly construction work)	10,503	10,646	4,365

The needs for professional, administrative, and clerical employees (salary policy employment) are, in total, somewhat greater now than last year; less in 1956. But a significant change is beginning to occur and will develop fully in the budget year. As the construction work nears completion, fewer design and construction engineers will be needed and more electrical engineers must be recruited for the power operations program. With a continuing scarcity of professional engineering personnel, this is a staffing problem which takes time and attention. The mounting increase shown in annual trades and labor employment is due entirely to the operation of completed power generating facilities. Four years ago this type of employment totaled about 3,300 man-years and was divided about equally between chemical operations and power operations. The latter is already requiring about 64 percent of the total, and by 1956 it will require 70 percent. Where formerly these annual trades and labor positions constituted only one-third of the total annual employment, they are now rapidly approaching the point where about the same number will be needed as are in the white-collar group. This introduces a number of increasingly important workload elements for personnel services—recruitment and training problems, adaptation of pay policies, integration of these employees into the employee-management cooperative program, appraisal and revision of existing policies as applied to an operation which requires the manning of facilities on a 24-hour basis.

The level of temporary employment shown in the table on page 327 points to the fact that personnel services needed to staff the construction work will continue at the 1954 level during all of 1955 and about half of 1956. In the latter part of 1956 the number of these employees declines, and the work involved in the separation of large numbers of workers will need to be done. This consists of processing personnel actions effecting reductions in force, transferring qualified employees to other jobs within TVA, supplying information to prospective employers about employees no longer needed by TVA, etc. In addition to these specific adjustments, personnel services must be provided for other program activities at about the going rate.

Medical and safety services make a significant contribution to overall operating efficiency and economy because they conserve the productive work time of trained employees and protect TVA's investment in expensive plant and equipment. Fully 83 percent of TVA employees are working in high risk environments where the probability of accidents and injuries is much greater than for office workers. Essentially all of the construction workers, those assigned to the chemical plant, operators of the powerplants, and crews building and maintaining powerlines and other transmission facilities are exposed to hazardous work conditions. Workers in shops, garages, and laboratories are likewise subject to occupational hazards. Considering this, TVA's latest safety award took on particular significance. Several times in the past the safety records of individual projects and operations have been recognized but this year the National Safety Council's Award of Honor, the top safety honor, was accorded TVA for the outstanding safety record achieved throughout all its operations. The achievement of such a record requires every-day attention to the detection, correction, or control of hazards on the job. It requires careful education of the workers in the need for and use of safety practices and equipment. It presents an unremitting challenge to seek better and better ways of preventing accidents and minimizing the cost due to them.

As construction work continues and the scale of power operations increases, medical and safety services must give particularly careful attention to prevention of employee injuries and to avoiding damage of costly equipment. Industrial hygiene studies aid in defining and controlling the occupational health hazards associated with the production of electricity, the manufacture of chemical fertilizers, with reservoir operations, and construction activities. Preemployment examinations discover whether applicants have physical conditions which would create undue hazards to themselves and others in particular jobs. Periodic physical examinations detect abnormal health conditions early and reveal whether workers are reacting unfavorably to potential health hazards associated with certain TVA operations; for example, conditions of noise and ventilation at the generating plants and toxic gases and abrasive dusts at the chemical plant. Immunizations help in the prevention of such diseases as typhoid fever, smallpox, and tetanus to which employees in the field, particularly, are exposed. Emergency medical care affords prompt treatment of occupational injuries and plays a major role in reducing time lost from work.

Legal services provide advice for the guidance of the Board of Directors and for TVA offices and divisions on all phases of program activities. The volume of legal

work is determined in large measure by the number and wide variety of written contracts which TVA uses in the conduct of its program activities. These contracts cover agreements and cooperative working relationships with Federal, State, local, and private agencies. They involve such matters as the sale and interchange of power, disposition of fertilizer, construction and relocation activities, and purchase of materials, supplies, and equipment. Also included is the preparation of deeds, licenses, and leases in connection with management of reservoir lands and the review of patent proposals and the prosecution of patent licenses and claims. As power operations increase, the required contract work becomes increasingly heavy both in terms of disposition of power and the procurement of fuel and other operating supplies.

The legal staff also defends all suits brought against TVA and files such suits on TVA's behalf as may be necessary to protect its interests. These cases involve enforcement of contracts, personal injury and damage suits, title and trespass matters, garnishments against TVA employees, and the numerous condemnation actions which result from the extensive transmission line construction program of TVA. The legal staff determines the applicability to TVA of legislation introduced in the Congress and in the legislatures of the valley States; it also prepares reports and drafts amendments and substitute legislation as required by the committees of the Congress and the Bureau of the Budget. In addition, legal work is performed for the TVA retirement system and in connection with applications to construct works in the Tennessee River and its tributaries under section 26a of the TVA Act.

Of all the administrative services, the greatest impact of advanced construction work and operation of completed power facilities is felt in the workload of fiscal services. Vouchering, auditing, and disbursing work is heavier as supplies, equipment, and materials are received than when funds are initially obligated for them. In the current year, it is estimated that some 186,000 vouchers totaling $473,400,000 must be audited before payment; next year there are expected to be about 177,000 vouchers valued at $400 million. During the past fiscal year this audit function saved TVA over $195,000 through correction of improper freight charges, unauthorized price increases, clerical errors, and other incorrect charges.

The greatest volume of plant accounting work occurs after the building stage is finished. At that time there is extensive accounting involved in rendering final cost reports, preparing unit records, transferring work in progress to completed plant accounts, and other related activities. Also, these plant records must be maintained as long as the property is in existence. Moreover, the steam-plant construction program and subsequent closings to completed plant have greatly increased the difficulty of establishing and maintaining plant unit records since steam plants are much more complex structures and contain a much greater number of property units than hydro plants. Considering that plant valued in excess of $414 million, exclusive of chemical plant, has been completed in the last 2 years, a substantial backlog of plant-accounting work has accumulated; in the next 2 years additional plant costing $644 million is scheduled for completion. Total plant in service now exceeds $1.5 billion and by the end of 1956 will be in the order of $2.1 billion. Because fully qualified plant accountants are difficult to recruit and require considerable time to train, it is more economical to handle this work over a period of several years with a permanent staff of experienced personnel rather than try to employ and train enough temporary staff to complete the work as soon as projects go into operation.

TVA's fiscal work has always been complex because, for chemical operations, procedures must be followed which are particularly suited to the development of fertilizer products and processes; for power operations, procedures must fulfill the requirements of the Federal Power Commission and provide management with operating and cost information related to all types of generating facilities; for other programs, still different procedures are needed. The large addition of steam generation facilities to the system has further complicated vouchering, auditing and disbursing work. One example is that, unlike hydro plants, fuel supply for steam plants is a major element of recurring expense. The fiscal services related to the transportation of coal for steam plants are increasing as each new unit goes into operation and as reserve stocks of coal are delivered. At the end of 1954, coal shipments for TVA steam plants were being received at the rate of 10 million tons a year. Deliveries will be around 14 million tons in 1955 and 18 million tons in 1956.

Fiscal services for payroll, leave, and retirement relate directly to the number and types of employees. The expected addition of annual trades and labor employees in the next 2 years will require the establishment and maintenance of

additional records which need not be kept for temporary employees. New work beginning this year for all employees is the administration of the group life insurance plan provided under recently enacted law. This will involve added payroll deductions and additional record keeping. The extension of unemployment compensation to Federal employees requires that procedures be established for reporting work data for separated employees. As major construction projects are finished and large numbers of employees are no longer needed, this information may have to be supplied in many cases. Recent legislation likewise requires that Kentucky State income tax be deducted from the wages of persons employed in that State; TVA currently has almost 3,000 employees for whom this will need to be done. Employee response to United States savings bond drives has brought TVA to first place among Federal agencies in bond purchases. During the last year this has nearly doubled the number of bond-deduction accounts and almost tripled the number of bonds issued. It is estimated that around 240,000 bonds will be issued this year.

Man-years of employment charged to administrative and general expenses

	1954 actual	1955 estimate	1956 estimate
Board of Directors	6.9	7.0	7.0
Office of the General Manager	12.7	13.4	13.5
Budget staff	9.4	9.0	9.0
Government Relations and Economics Staff		16.6	11.5
Washington office	4.3	4.4	4.4
Information office (including technical library and scheduling of foreign and other visitors)	23.6	24.0	16.0
Division of Personnel	121.8	122.2	109.4
Division of Law	33.5	34.8	34.7
Division of Finance	200.9	202.2	190.0
Division of Property and Supply	87.0	85.2	84.1
Operation of medical and safety service units	58.7	65.1	59.9
Total	558.8	583.9	539.5

Mr. RABAUT. General Vogel, did you want to make a statement to the committee?

Mr. VOGEL. Yes, sir, unless the committee has questions on the other items. I want to talk about the very last one.

Mr. RABAUT. All right.

GOVERNMENT RELATIONS AND ECONOMICS STAFF

It appears from the justifications that you have created or are creating a new staff called Government Relations and Economics Staff, for which $100,000 is programed.

Will you please explain the need for this staff?

Mr. WAGNER. Is that the last item in the table?

Mr. RABAUT. No, Government Relations and Economics Staff.

Mr. WAGNER. That is a staff which was formerly in a division whose work was of such a nature and extent that its costs were charged to the resource development category. This is one of the areas where we have revised our organization, have eliminated that division.

This staff in 1954 was carried in the resources development budget. The funds which were appropriated for resource development in 1955 included funds for that staff. They now, as a service to central management make analyses of regional conditions and economic trends, assist in the coordination of regional development programs and provide liaison with State agencies. Because of the change in character of their work they are now included in the administrative and general category. They were put on the budget of the General Manager's office in 1955, and we reduced our budget below the amount appropriated for resources development by a corresponding amount.

Administrative and general funds available in 1955 are being used for that staff. It will be continued at a reduced rate in 1956.

Mr. VOGEL. May I say, sir, I do not concur with the necessity of carrying that staff. So far as I can tell they are making only esoteric studies which have no practical value. The last report which was made by them was entitled, and I don't know how many man-hours went into this but Mr. Wagner perhaps can tell you, "Is the Tennessee Valley Favored in Federal Appropriations?". I do not think it is our business to find out whether we are or are not favored in Federal appropriations. I think that is a matter for Congress to consider. I believe we can well dispense with those services, and my other suggestion will follow later as to what I think we should do.

Mr. RABAUT. Do you want us to take out the $100,000?

Mr. VOGEL. I don't think we need the work. I think my colleagues will have other opinions, however.

Mr. RABAUT. Who else wants to be heard on this item?

Mr. WAGNER. Let me say, Mr. Chairman, that the staff in this budget is as approved by our Board of Directors.

Mr. PHILLIPS. Is that the same group which published The Use of the Earth for the Good of Man?

Mr. WAGNER. No, sir; it is not. The report to which you refer is a reprint of TVA's annual report to Congress for fiscal year 1953, and that is the title given to it.

Mr. RABAUT. Let us talk about this group now. What about this item?

Mr. WAGNER. The inclusion of this group in our administrative and general budget is in accordance with budget plans which were approved by our Board.

Mr. PHILLIPS. Who gets out the roadmap for the Tennessee Valley which shows how to get to the Tennessee Valley from any part of the United States? Don't you think the three A's can do that pretty well?

Mr. WAGNER. I haven't seen the map, Mr. Phillips.

Mr. RABAUT. This is a peculiar situation we have here now. This evidently was in the budget when taken to the Bureau of the Budget.

Mr. VOGEL. Sir, I am sometimes a minority member of my Board.

Mr. RABAUT. And the Bureau of the Budget approved it.

Mr. VOGEL. That is right.

Mr. RABAUT. You are not a minority member so far as the Bureau of the Budget is concerned, though.

Mr. VOGEL. Yes, sir. Why am I not, sir?

Mr. RABAUT. Well, I would say that the Bureau of the Budget would be the agency of the administration, and you are differing here with the administration, are you not?

Mr. VOGEL. The Bureau of the Budget, sir, plays the game straight across the board.

Mr. RABAUT. The Bureau of the Budget is in the Executive Office of the President, is it not?

Mr. VOGEL. The President's Office did not show favoritism.

Mr. RABAUT. I don't know about favoritism.

Mr. FOGARTY. You wouldn't say the Bureau of the Budget has not. You are not in a good position to say whether the Bureau of the Budget plays it across the board or not, are you?

Mr. VOGEL. They favored the majority view, as I think they should. I have no quarrel with that.

Mr. FOGARTY. Maybe you are in a position to know so far as your past work has been concerned, but that is an infinitesimal amount of the work the Bureau of the Budget has to do.

Mr. PHILLIPS. Didn't he refer to just this item?

Mr. RABAUT. But the point is that I don't think I have ever had anything similar to this in my experience. This item goes to the Budget from their agency.

Mr. PHILLIPS. That is right.

Mr. RABAUT. He is a member of the agency. From their agency it goes to the Bureau of the Budget. The Bureau is a part of the Executive Office of the President.

The General is an appointee of the President, so he is differing with the President's budget, is he not?

Mr. PHILLIPS. I think you said yesterday the Budget Bureau was not always correct.

Mr. RABAUT. I am saying it again, but this is the first time I have ever had such an experience in my 20 years around here.

Mr. PHILLIPS. I thought Mr. Fogarty misunderstood the situation.

Mr. FOGARTY. He said the Bureau of the Budget plays it across the board. They show no favoritism.

I thought that is what he meant in everything. That is not the case according to my experience with them.

Mr. RABAUT. We will have to have both sides of this now to find out why this either should be deleted or kept in the bill.

You say it should be in the bill.

Briefly, why?

Mr. WAGNER. Mr. Rabaut, this staff during the past year has provided a service which has been very useful to my office.

It was recommended in the budget which went to the TVA Board for approval, and it was in the budget which was approved by the Board.

General Vogel, I honestly do not remember what your position was on this item at the time.

Mr. VOGEL. I honestly never have been able to find out what the group does.

Mr. RABAUT. Did you object to it before the Bureau of the Budget?

Mr. VOGEL. I don't recall, sir.

Mr. RABAUT. You do not remember if you objected to it?

Mr. VOGEL. I do not recall.

I think perhaps it would clarify matters considerably if I made a little statement at this time with respect to that and what I referred to earlier.

Mr. RABAUT. All right.

QUESTION OF CREATION OF MANAGEMENT STAFF

Mr. VOGEL. I would like to invite the attention of the committee to the item entitled "Undistributed contingency," which is the very last one. There is shown there a brand new item of $100,000 which has not appeared before.

I do not wish to create an impression that my colleagues and I are eternally at loggerheads because such certainly is not true. I would say in 95 percent of the propositions brought before us we are in

harmonious agreement. Dozens of routine matters relating to purchases, employment, promotions, and so forth, are considered at board meetings and passed upon without dissent. But there are always cases involving policy where no human beings will see eye to eye.

It so happens I have had most of my career in the military——

Mr. RABAUT. This is a different item than the one we are talking about now?

Mr. VOGEL. I will refer to them together but they are different.

Mr. RABAUT. All right, so I have it clear.

Mr. VOGEL. I believe that the Tennessee Valley Authority, being a complicated organization of many parts, and being organized on a decentralized basis, should follow a principle of business, industry, and many other of our Government agencies by having as a device for the people who run it to lean upon, a management division.

In that my colleagues do not agree, nor have I have able to prevail upon them to agree.

Because there was that difference of opinion the Bureau of the Budget inserted the last item of $100,000 for contingency money, leaving it to you gentlemen to decide on merit whether or not the TVA should in fact have a management staff.

As I have said, TVA is a good, sound organization, and it is soundly conceived in that it is decentralized.

But I do not believe that you can decentralize any organization to the point that top management can put its implicit confidence upon one man, a general manager, assisted principally by a group of people who comprise a Government relations and economic staff.

I am making a plea with you gentlemen that we put ourselves on a business basis, and I think that Mr. Wagner, as General Manager, in spite of my colleagues, is entitled to a management staff to assist him in bettering the operations of our organization.

I am not speaking of something that is new or different. The Department of Defense has it through every element, and many other agencies of Government and practically every business you can name depends on a management staff for guidance.

I think we should have the same thing in the Tennessee Valley Authority.

I will be glad to go beyond that or I will be glad to have my colleagues speak and give their reasons why they think we should not have such a staff, but I believe a staff such as I have described, sirs, should be comprised of people trained in management, trained in business administration, trained in time-space studies; they should be brought in in large part from outside the organization. They would not comprise a personal staff for the chairman. I would like to make it clear that that is not the purpose.

It should, however, serve as a group which can go into the decentralized divisions of the total organization, find out where overlaps may exist, where there may be duplications, or where economies may be practiced.

As an example of some of that, I get a lot of letters from people which I feel are my responsibility to look into.

All I can do is to turn to the general manager and say "Would you get me the facts on this?"

Generally the method of obtaining those facts is to turn to the division which is affected and say "Will you tell us whether you have too many people in your division?"

Of course you know the answer you will get.

Or a committee may be appointed from several divisions to look into the activities of another division, and that takes the time of those people from their work.

Here is a letter I received in March. I will not read all of it and what I do read will be off the record.

(Discussion held off the record.)

Mr. VOGEL. I think things such as these should be viewed objectively and not passionately by TVA itself and by a staff which is competent to do so.

I also have before me a record of the publications which have been put out by TVA, showing the money expended in the last year.

Mr. RABAUT. Do you have the publications there?

Mr. VOGEL. This is a whole report, sir, which I will be glad to give you.

Mr. RABAUT. All right. We will put it in the record.

Mr. VOGEL. $85,000 is for publications for administrative use; $40,000 is for publications for internal information; and $28,000 is publications sent out to the general public. That includes in the main only the costs of reproduction. I feel there is a duplication of effort all through here.

Mr. RABAUT. Off the record.

(Discussion held off the record.)

Mr. RABAUT. We will file that statement with the committee.

Mr. VOGEL. My point is solely this, sir—I believe there can be eliminations, I think there can be a working out of overlaps.

For instance, we are now publishing safety bulletins in every single steam plant in the area.

Two or three times I have made suggestions that we issue one safety bulletin centrally and distribute it to all of these places instead of printing a dozen different editions or issues.

My suggestion is taken to the Chief of the Safety Division and he comes back and says "That will cost more." That is the end of it.

I think we need objective studies, sir.

Mr. RABAUT. General, there are two items here——

Mr. CANNON. Mr. Chairman, in order that the General may clarify his position, may I call attention to the fact that apparently he does not agree with the budget.

Mr. VOGEL. Only on the minor items, sir. I do not agree with these items right here.

Mr. CANNON. In other words, then, the gentleman disagrees both with the President, who submitted this budget, and he disagrees with all other members of his Board. Is that the situation?

Mr. VOGEL. I think that is putting it a little wrongly, sir.

Mr. CANNON. The President recommends this budget. Apparently his colleagues on the Board recommend it.

I understand General Vogel is in opposition on these items.

Mr. VOGEL. No, sir; I believe there should be a rearrangement of that.

Mr. CANNON. In other words, then, you disagree with the budget as submitted to the committee.

Mr. PHILLIPS. With that item of it.

Mr. RABAUT. Two items.

Mr. VOGEL. With two items; yes.

Mr. PHILLIPS. I hope my chairman is not suggesting the President read all of this budget.

Mr. JENSEN. The President of the United States never saw the budget, or possibly this item.

Mr. CANNON. He signed it. It is his budget.

In this connection, General, I note a reference to a request made to the Budget in connection with legislative designation of yourself as the executive head of this agency, asking that you be made head of the agency and that you be given direction of the work of the agency.

Did you make such a request?

Mr. VOGEL. I think I made a suggestion to the effect that there should always, in every organization, be someone who can handle the executive authority as necessary. I think any board has to have an executive head who can make the final decision, make the final signing of documents.

I have been very careful, Mr. Cannon, in executing the duties of my office to speak fully for the Board which I represent, and if there is a divergence of opinion to point out that divergence and where it becomes one which is only that of the chairman.

Mr. CANNON. Your request to the Bureau of the Budget, then, was that you be made head of the agency with authority to proceed with the work of the agency regardless of the attitude of your colleagues on the Board?

I wonder if you would include in the record here a copy of the letter which you——

Mr. VOGEL. I have no copy of any letter, sir, and the statement you made is not the situation at all.

Mr. CANNON. Did you, General, write a letter to the Director of the Budget requesting that you be designated, or requesting that there be recommendation of legislative designation of yourself as head of the Board, and that you be placed in charge of the work of the agency?

If you did, will you include the letter at this point in the record?

Mr. VOGEL. I have not such a letter. I do not recall the wording if one was written. I only recall that I did at one time or another suggest that somebody should have the authority to act as executive spokesman for the agency.

I am not asking for exceptional powers, because I feel I am already the head of the agency.

Mr. CANNON. You did make this request, and you did make it in writing, as I understand it, from your statement here? Then it must be in your files. If it is in your files would you produce it?

Mr. VOGEL. I will determine if it is there, yes. I haven't it in my personal files, sir, because I have no personal files.

Mr. CANNON. But you do have files from which you could secure a copy of this letter?

Mr. VOGEL. We have office files. I will ask Mr. Wagner to get it, sir.

Mr. CANNON. And at this time will you also include the reply to that request addressed to you by Mr. Hughes, the Director of the Budget?

Mr. VOGEL. If we have it.

Mr. CANNON. Give us your letter making the request and give us the reply which you received from Mr. Hughes, the Director of the Budget, in response to your request.

(The information requested is as follows:)

NOTE.—The only correspondence in TVA files relating to this matter is the letter of December 6, 1954, to the Director of the Budget signed by TVA Chairman Vogel and the Director of the Budget's reply dated December 11, 1954, which were placed in the record earlier. (See p. 163.)

Mr. CANNON. I would like to ask what is the relative size of this agency and the business which it conducts as compared to the average business corporation in the country?

Mr. VOGEL. In its power aspects alone, sir, it has four times the capacity of Detroit Edison.

Mr. CANNON. TVA serves a vast territory, and its annual budget runs up into large figures when compared with any private corporation.

Now will you tell us why you think that you, with a few months' experience here, would know more about this business and would be better qualified to direct it than the other members of the Board and members of the staff who have been connected with TVA for 25 or 30 years?

Mr. VOGEL. You put me in a very difficult position, sir.

May I say that I hold no particular brief for my own abilities and my own qualifications. I acknowledge, sir, as you brought out clearly at the beginning of the hearing, that I have been in the TVA for only a matter of 8 months.

However, I have had thirty-odd years of experience in the military forces, all of that with the Corps of Engineers, and during that period I have served continually in the field of developing our natural resources.

I do feel that I know something about the matters pertaining to TVA——

Mr. CANNON. More than the men who have been connected with it for over a quarter of a century?

Mr. PHILLIPS. He didn't say that.

Mr. JENSEN. You said you agreed 95 percent of the time with them.

Mr. VOGEL. I think Mr. Cannon heard that. My colleagues and I are not——

Mr. CANNON. The fact that you request dictatorship——

Mr. VOGEL. Sir, those are not my words.

Mr. CANNON. Your request indicates you think you can do it better and you are better qualified to operate TVA.

Mr. PHILLIPS. I take exception to the word "dictatorship" right now because that is not indicated.

Mr. CANNON. I didn't hear you.

Mr. PHILLIPS. I took exception to the word "dictatorship" applied to a man who merely wants to act as Chairman of the Board to which he has been appointed as Chairman.

Mr. CANNON. The thing speaks for itself. He wants to take it away from the Board, a group of men who have been handling it with admirable success, and concentrate control in one man. That is pretty much a dictatorship.

What is your salary at this time as a member of the Board?

Mr. VOGEL. $15,000, sir.

Mr. CANNON. Is that in addition to the amount which you receive in the way of retirement pay from the Army or is your retirement pay deducted from the $15,000?

Mr. VOGEL. That is my full salary, sir. I do not draw my retirement pay from the Government.

Mr. CANNON. How much were you entitled to receive from retirement and how much did you receive as a retired Army officer?

Mr. VOGEL. I never have been terribly interested in money and to tell you the honest truth I don't know, but I think it would be around $7,500 or $8,000 a year right now.

Mr. CANNON. What you really want to do here is at variance with the action of the Congress.

The Congress, after long deliberation, wrote this law and set up this agency to be administered by a board of three men. You want to overturn the decision of the Congress and concentrate control in yourself, as I understand it.

Mr. VOGEL. I don't think you understand it correctly then, sir, because I have not said that.

Mr. CANNON. In what respect is that true, then? The law as passed by Congress, provides for a board of three men. I doubt whether there has been any Government agency which has been more successful in its operations, from the standpoint of results obtained, than Tennessee Valley Authority.

Congress says control should be vested in a board. But you say that Congress is wrong about it.

Mr. VOGEL. I never have said that, sir.

Mr. JENSEN. Mr. Chairman, let us be fair with this man.

Mr. CANNON. I am glad to hear you say that.

Mr. JENSEN. Just be fair.

Mr. CANNON. I am asking the general a very plain question here. After Congress passed the act, and as I recall it my good friend from Iowa voted for it, and I think my good friend from California voted for it——

Mr. JENSEN. For what?

Mr. PHILLIPS. For what?

Mr. JENSEN. What did I vote for?

Mr. CANNON. Didn't you vote to pass the TVA Act?

Mr. JENSEN. I wasn't here then.

Mr. PHILLIPS. I wasn't here.

Mr. CANNON. Well, your predecessors were here.

Mr. PHILLIPS. I had no predecessor. I was the first Representative in a new district.

Mr. CANNON. Congress passed this law.

Now the general wants to change it.

Mr. JENSEN. He is just making suggestions.

Mr. CANNON. He comes in here years after this agency was created, after this very successful quarter of a century, and says Congress is wrong about it, that there ought to be a dictatorship, one man in charge of it, and he asks the Bureau of the Budget to appoint him. He makes an official request in writing for it, but the Bureau of the Budget doesn't agree with him.

Mr. JENSEN. Which every agency of Government has asked for many times.

Mr. CANNON. I cannot yield, Mr. Chairman.

Mr. JENSEN. I will talk when you get unfair. You cannot stop me.

Mr. PHILLIPS. Mr. Rabaut will give us an opportunity later.

Mr. RABAUT. Everyone will have a chance.

Mr. CANNON. So General Vogel finds himself here in opposition to the President, in opposition to the Director of the Budget, in opposition to the Congress, and in opposition to the other members of his Board.

I think, Mr. Chairman, that speaks for itself.

Mr. PHILLIPS. Now, Mr. Chairman, that Mr. Cannon has expressed his personal opinion, I think perhaps we are entitled to make a few corrections.

Mr. CANNON. Mr. Chairman, I cannot hear the gentleman. Will he speak louder?

Mr. PHILLIPS. I said I thought you had expressed a personal opinion.

Mr. CANNON. No; I did not. I submitted facts.

Mr. PHILLIPS. I will yield to you, Clarence. What do you want to say?

Mr. CANNON. I said it is not a matter of personal opinion at all. We have before us the opinion of the President in the budget which he signed. We have before us the letter which the Bureau of the Budget wrote to him disagreeing with him. We have before us the act of Congress showing the attitude of Congress when it passed the act creating this Agency. And we have before us the other two members of the Board, and I would be glad to have their opinion on the expediency and the wisdom of discontinuing their control of the Board and turning it over to one man, General Vogel.

Mr. PHILLIPS. Now if I may resume, Mr. Chairman, Mr. Cannon has expressed another personal opinion.

Mr. CANNON. Mr. Chairman, I withdraw my request because I realize it may involve a personal embarrassment.

Mr. PHILLIPS. I do not think Mr. Cannon should be embarrassed by it.

Mr. RABAUT. He did not mean embarrassment to himself but embarrassment to others.

There is a roll call. What do you want to do, go to the roll call and come back?

Mr. PHILLIPS. I want to make a defense of the President of the United States whose judgment has been impugned.

General VOGEL. I would like to say something for myself, sir.

Mr. RABAUT. Suppose everybody stays until we answer the roll call and we will come back.

Mr. PHILLIPS. We have sat through 4 hours of what I would call extraneous statements having nothing to do with the hearing.

Mr. JENSEN. If this is a trial of General Vogel, I think we had better sit.

Mr. RABAUT. We will go up and vote and come back here.

(Short recess.)

Mr. RABAUT. The committee will come to order. Mr. Phillips.

Mr. PHILLIPS. Very briefly, I thought the record should show a statement from a member of this subcommittee who has been helping make the budget for TVA for about 9 years. When our distinguished chairman, Mr. Cannon, says there has been a constant approval and no criticism, or words to that effect, I would say that the facts are not in conformity with that statement. The subcommittee has refused money, the Congress has refused to appropriate money for the requests;

The whole effort of the Congress in the last few years—not the whole effort but a very marked effort of the Congress—has been engaged in management surveys. We have appropriated, I do not know how much money in this subcommittee, for management surveys, for efficiency, for investigations, to do the very things General Vogel is suggesting should be done in TVA, and any statement that they are in attempt to secure arbitrary power in his own hands is in direct contradiction to the intent of Congress in instructing all the agencies of Government to improve their efficiency. I, myself in the last few days have been downtown with GSA making a personal investigation of an agency which, like this one, has not improved its procedures over the years. I felt that statement of our distinguished chairman was not accurate and that the record should show it was a personal opinion.

Mr. CANNON. In response to that, the gentleman has expressed his own personal opinion.

Mr. PHILLIPS. Not his own personal opinion, but the opinion of the subcommittee.

Mr. CANNON. Without any factual basis. If you will read the two letters which General Vogel will include in the record, his letter to the Director of the Budget and the Director of the Budget's letter to General Vogel, I think they will set at rest any question there may be.

Mr. RABAUT. Those letters will be placed in the record?

Mr. CANNON. We have asked him to place them in the record.

General VOGEL. Mr. Chairman, may I have 5 minutes without interruption?

Mr. RABAUT. Yes, General Vogel.

General VOGEL. I have been accused of many crimes for making to you what I consider a very simple suggestion in the interest of the United States and of TVA. I made that suggestion without any attempt to impress this committee with the idea that it represented the majority views of my Board.

I feel deeply about this matter. I feel in this particular instance that I am right, and they are wrong. I will not try to tell you why I think they are wrong or why I think their experience may be less than mine, but my suggestion coincides with the procedure followed by business organizations and in large measure by the larger branches of our Government.

This is a very large and important organization with which we are dealing, handling a great deal of money. I subscribed, when I took the oath of office, to my belief in the wisdom and feasibility of the act. I thus reaffirmed my belief in the wisdom and feasibility of the act, having given it first when I testified before the Senate committee. I am glad to reaffirm it to you now. I do believe in the act and I believe we should all work hard to make it a real thing, a strong thing, to make it prove its worth and do it with economy.

My very simple suggestion, if I may repeat it, was that the office of the General Manager—let me repeat, the office of the General Manager, not the office of the Chairman—be reenforced by giving him a greater strength whereby he may find the truth that may relate to inefficiencies, overlaps, or what have you.

I know I will be quoted after saying that, as having said TVA is inefficient. I do not so charge. I only say that no organization or

anything made by man can be completely perfect. I think we can improve it.

To clarify the point you made earlier and upon which there may have developed some confusion as we went along, the first item related to the Government relations and economic staff and was in the amount of $100,000. I went along with my Board at the time it was submitted to the Bureau of the Budget, because I had no real reason to disagree. As I have said, I still do not know clearly today what that group does and I honestly have tried to find out. But I, also, suggested to the Bureau of the Budget, and discussed this with my colleagues, that there be put in the budget an item to create a management staff. My original idea was that it would report to the Board through the Chairman, but later I took the position that it should be under the General Manager and substitute for the other staff group in his office because certainly the General Manager does not need two such tools.

The Bureau of the Budget, when they saw that my colleagues and I were in conflict—and believe me I have made it clear whenever that has occurred so that no one could ever say I have held up a majority report—when the Director of the Budget realized that we were not in full agreement, he said, "We will put this in as a contingency item and if you can convince the committee of Congress, all right." I am simply trying to convince you. If I have not done it, I suggest you simply tell me that I have not convinced you.

Mr. RABAUT. You referred to a board or staff to assist the General Manager. Has the General Manager complained to you of lack of unity in the organization or anything of that kind?

General VOGEL. No, sir.

Mr. RABAUT. That leaves you kind of wordless.

General VOGEL. It sounds as though I am against the whole organization, but I am not.

Mr. RABAUT. I do not say you are against it, but here are two figures identically alike. You want to take one group of figures out and relieve the people under that group of figures, and you want to set up an identical figure for another group.

General VOGEL. I would be glad to have him combine it in any way he sees fit, but he is acting under the instructions of the other two members of the Board.

Mr. RABAUT. What is the term of service of these people we are talking about relieving? I am not even anxious to spread their names on the record.

General VOGEL. I think it would be better if it were not done.

Mr. RABAUT. All right. There is no desire to hurt anyone. The question is, what would be the term of service of these people? Could you supply me with that at this point?

Mr. WAGNER. Of the people in the government relations and economic staff?

Mr. RABAUT. Those you are contemplating to remove to make a place for this new group that you feel would be more efficient.

Mr. WAGNER. I do not believe we have the length of service of these people. We could supply that.

Mr. RABAUT. Suppose, for the benefit of the committee, you furnish to us, confidentially, the names of the people, not on the record, but to the committee, and the terms of their services.

Mr. PHILLIPS. I am not sure that we understood the General correctly.

I did not understand that he was trying to relieve a specific number of people, individually, and replace them with another specific number of people who are entirely new people. I understood that he was attempting to suggest the reorganization of the internal business.

Mr. RABAUT. He wants a group to support the members, and the management has a group which is working with it now, and that group would have to go.

General VOGEL. Not necessarily.

Mr. PHILLIPS. That group is doing something else.

Mr. RABAUT. What would this $100,000, which is being eliminated, amount to?

General VOGEL. There are a lot of ways to do this. You can integrate people into the work in other capacities, or continue to use 1 or 2 in the new job. My idea involves a very small group. I am not talking about a large group. I am talking about, maybe, 3 or 4 people at the most. That is what I have in mind.

If you feel, or if the others feel, that there is need for something that can be done in addition to that, I have no objection to it, for I have no idea that a group such as I have in mind will cost the amount proposed but I do think any organization of this size and magnitude needs some kind of help through management.

Mr. PHILLIPS. I think I should say, for the benefit of my distinguished friend sitting by me, that I used to do internal reorganization work when I was in private business.

Is it not a fact, Mr. Wagner, that what the general is suggesting is today in large organizations the normal thing? That is, do you know of any organization of any size which does not have such a management office, or section such as the general is suggesting?

Mr. WAGNER. Mr. Chairman, I am sure you appreciate that it is embarrassing for me to get into this discussion.

Mr. PHILLIPS. You are not getting into any row. You can answer yes, or no.

Mr. WAGNER. I understand there are organizations that have management groups of this kind, and I believe there is a considerable number which do not.

Mr. PHILLIPS. There would also be management groups which are hired for this purpose.

Mr. RABAUT. Have you left any inclination anyplace, or any suggestion anyplace where you felt that you were dissatisfied with the assistance that you were receiving at the present time which gave birth to this whole idea?

General VOGEL. No, sir; I have not.

Mr. RABAUT. Are you satisfied with the situation as it is with you now?

Mr. WAGNER. Certainly I would not argue that any management could not be improved, and we constantly try to improve our own. I think, however, the test as to whether management is good or not is in the results. Our base costs for power production, transmission and distribution, and administrative costs are, according to Federal Power Commission figures, about half the average for privately owned utilities in the country. Our construction costs, as has been testified

here, have been close to our estimates, and compare favorably with those of other organizations

In regard to more detailed matters of administrative practice, our accounting system has been endorsed by many people, and you gentlemen may know that it was praised highly by Mr. T. Coleman Andrews at the time he was the head of the Corporation Audits Division of the GAO, and now Commissioner of Internal Revenue. Our automobile operating costs are about 12 percent lower than the average for the Government fleet generally.

A Hoover Commission task force recently complimented us highly on our freight traffic management, and freight traffic is a considerable item with us.

Our safety records are generally better than those of private industry groups of comparable size.

These are some examples. I believe you gentlemen understand that I have been General Manager of TVA less than a year, and finding that kind of a record, I have not recommended to the Board that we change our management arrangement in the respect that the chairman suggests.

The general organization of TVA in its major features is subject to approval by the TVA Board.

Mr. RABAUT. I have a note here that says that TVA won the National Safety Council award of honor this last year, and that TVA employees have purchased, through United States savings bond drives, enough bonds to put the agency in first place among all Federal agencies in bond purchases.

Mr. WAGNER. Yes, sir.

Mr. RABAUT. That is quite a nice thing.

Mr. PHILLIPS. They also have one of the highest average income lists, I think.

General VOGEL. Mr. Chairman, I do not know whether this is intended to imply that I am criticizing TVA, because I certainly am not. I have made it clear, I think, on numerous occasions, that I think it is a fine organization, and is doing a fine job, but I do say that I think any organization, sir, can be improved. I think when we take the view that we are living within ourselves, within a closed circle, and assume that we are perfect, the game is over, and we are then ready to die.

Mr. RABAUT. No; General, that is not the point. The point is this, and I want to be as fair and honest as I can about it:

The point is this: Everyone is human. This agency is just as human as all of the rest of us, and we are all subject to error, but here you are, in here, differing with your Board, which is one thing, but at the same time you are differing with your President. Yes; you are differing with the budget.

Now, General, you cannot get around that. You can say that is not your intention, but it is. The whole result is that you—and I think even my colleagues will have to admit—that you are differing with your own budget, and the budget is the budget of the President. Every time that a budget is spoken of on the floor of the House, it is referred to as the President's budget, and if something is wrong, when we are in power, they would say to us: "It is your budget; you are the ones who asked for it."

Now, you are in there, and new in the office also, and here you are coming in here with us, differing with the budget, and differing in a way with your own budget.

If some one of the opposite party was differing with the budget, you would say probably there is a reason for it, and I would not say there is not a reason in your mind for it, either, and it might be a noble reason, but it is a peculiar situation, such as I have never experienced in all my years in Congress. I can honestly say that to you.

I have never had a similar situation to this arise during all the years I have been here.

Mr. PHILLIPS. The testimony does not quite confirm what you are saying, and what you are detailing. When you and I talk about the President's budget, we know what it means. The President signs it.

Mr. RABAUT. We know the President does not see the budget; we all know that.

Mr. PHILLIPS. That is right.

Mr. RABAUT. But, nevertheless, it is his budget.

Mr. PHILLIPS. It is the administration's budget.

Mr. RABAUT. I asked the question if General Vogel objected to the item to which we have been referring being in the budget, and he said he did not.

General VOGEL. No, sir; I never did, and I do not object to it now, as such.

It is only that I have made a suggestion, sir, whereby I think something can be done better.

Mr. PHILLIPS. The general's testimony, which we do not have to have read back, will indicate that the general said that the Bureau of the Budget said to come down to this committee, and this committee was to decide it.

That is the unusual thing about it, Mr. Chairman.

Mr. RABAUT. Yes; that is unusual.

Mr. PHILLIPS. That is the most unusual thing I have heard.

General VOGEL. If I have failed to make my case, sir, I must be satisfied with the judgment.

Mr. JENSEN. I think the gentleman, General Vogel, should be highly complimented for taking the position which he has, even though it is in the budget. It proves that he is not a rubberstamp. It proves when he sees something which he thinks should be corrected, he has the intestinal fortitude so say so, before a committee of Congress, and certainly to condemn him for that is very unfair.

Gentlemen, I have sat on this subcommittee, and other Appropriations Subcommittees of Congress for 13 years, and this is possibly the only exception where someone has told the committee right out openly that they disagree with the budget in a certain instance.

Other officials of the various agencies of the Government will come to you and say, "Listen, there is an item in here which should be taken out, and I hope you take it out." Now, you know they have done it; you know every one of you has experienced that.

Mr. PHILLIPS. Why, of course, we have.

Mr. JENSEN. Why, of course you have, and General Vogel has the intestinal fortitude to come right here and say what he thinks, and let the chips fall where they may, and I honor him for it.

I wish we had more like him.

Mr. KIRWAN. I do not know enough about it, but I know this: I have been in the Congress a few years, and I have been defending Government organizations, and I am going to defend this one, because there is no man in the United States trained like a Government official.

Why do I say this? Every time we get in a crisis we do the most foolish thing in the world. We reach out, like we did a few years ago, and get someone from the head of General Motors to be the "Mr. United States," and it was not long until we had to kick him upstairs. During the last crisis we had to go down to General Electric, and get another, and when you sit across the table like you did one day, Mr. Cannon, when you were asking questions for 4 hours, and he never answered one, then something is wrong.

Then, when you see the Jones & Laughlin Co. reaching out and taking a man like Admiral Morrell and putting him at the head of Jones & Laughlin Steel Co., a man who was never in a steel plant; when you see the Du Ponts pick up a general of the Army and place him in a very high position; when you see Somervell made president of the Koppers Co. before he died, and General Robins go in as one of the heads of the Portland Gas & Light Co., all Government-trained, that is why I say here today, as I have said in my 20 years in Congress, that there is no person in the United States trained like a Government employee. He is capable.

He is what a Government employee should be, and that is why I have been a defender of them all the time.

I am not taking the side of the Government employees across the table here, but I am only calling the turn as I see it. I have seen it in working with groups, and I have seen it in working with corporations. There never was a corporation on the same par with Government.

Mr. PHILLIPS. I think you are complimenting the general, because he is Government-trained.

Mr. KIRWAN. I understand that. I am complimenting everyone here. I am saying that I have sat in committee rooms, and have seen disagreements come up, and now some little fuss came up in here. There may be a misunderstanding, or there may be something else. However, I have sat for 20 years on subcommittees, and I have seen people offend them, insult them, and do everything in the world, and try to tell the Congress what business is doing, when business could not begin to start to handle what the United States is doing. I am not trying to tell who is a success, or who is not a success, but I am only saying this:

When you read over the record of what has been accomplished, I will guarantee you that there is no business in the United States that has accomplished what the Federal Government has.

Mr. PHILLIPS. When Ben Moreell went over to Jones & Laughlin, and when he made various suggestions as chairman of the board for improvement in the management, do you suppose they asked the people down the line whether they had indicated they wanted these changes made?

Mr. KIRWAN. If he went over there, then, you are coming back to my theory. There is a man who never put a foot in a steel plant, and when he becomes chairman of the board, there is something wrong with business in the United States. You cannot take a man who never put a foot into a steel plant, and expect him to run it. Here, we are hollering all the time, how great business is.

Mr. PHILLIPS. Maybe he knew about administration.

Mr. KIRWAN. There never lived a man who knew something about administration if he did not know the product he was administering. I do not care who the man is. If he didn't know what it was, he could not administer it.

John Sharp Williams, the Senator, defined that in a filibuster in the Senate when he asked who held the record for filibustering, and it looked like Huey Long took it away from him. They asked how long could he have spoken, and he said, "If I knew what I was talking about, 5 minutes, but if I did not, I could talk to the end of time."

John Public is the one who is suffering.

Mr. PHILLIPS. I think your theory about knowing the business was good, up to about 20 years ago, but I notice, with the various legal problems and accounting problems which have come up that banks and businesses are taking lawyers, and expert accountants in to be their presidents, instead of always taking bankers.

Mr. KIRWAN. I know down through the years as we had until about 20 years ago, the son was generally put in, who knew nothing about the business, to take the father's job, but today they are taking men right out of the steel plant who went in as a laborer, and who has followed the steps up.

The superintendent in my town today of the United States Steel worked with me a few years ago. He came in as an ordinary workman, and today he is the head of it.

Mr. JENSEN. Mr. Chairman, after it is all said and done, the proof of the pudding is still in the eating. The fact is that this United States of ours has done very well. We have here the finest country in the world, as well as the highest and the best economy. We pay the best wages, and we live better than any other people in the world. We have operated under the private enterprise system which has been run by the businessmen of America.

Mr. RABAUT. You are going to get me going on the automobile business.

Mr. PHILLIPS. We have a national debt of $275 billion.

Mr. RABAUT. Now, you have covered it. We have a national debt of $275 billion.

Mr. JENSEN. Who is to blame for that?

Mr. RABAUT. Yes; who is to blame for it?

Mr. JENSEN. Let us not blame the private-business man.

Mr. RABAUT. I am not trying to blame the private-business man. I am saying you are not going to blame some other foreign nation for our debt.

Mr. JENSEN. Well, of course, Congressman Kirwan, we could go on and on and on.

Mr. FOGARTY. Mr. Chairman, I want to reiterate what was said before. I have not been on this Appropriations Committee as long as other members of this committee have, since it is only my ninth year, but this is the most unusual testimony, General, to which I have listened during the 9 years I have been on the committee.

You come in here as an employee of the Federal Government, and without being asked what you thought of these individual-line items in the appropriation bill, you not only volunteered, but insisted on being heard, in order to tell the committee that you did not agree with that line item of Government relations and economic staff of

$100,000, and you go on to testify that you just made a suggestion to the Bureau of the Budget.

How did you make the suggestion?

Tell us, step by step, just what did happen.

General VOGEL. Let me say, first, Mr. Fogarty, if I have made some statement out of order through, let us say, ignorance, I am very sorry.

As to suggestions made to the Bureau of the Budget, nothing was made in a clandestine way, and all budget matters are contained in official correspondence.

Mr. FOGARTY. I did not intimate that there was. I just want to know in what way did you make the suggestion? Through a letter to the Director of the Bureau of the Budget?

General VOGEL. As I recall, the forwarding letter to the Director of the Budget or to the Bureau of the Budget, stated the recommendations of the Board of Directors, and stated that the Chairman disagreed to this extent, and asked that an item of $100,000 be included for the establishment of a management staff. That is all—that is all I can remember and my recollection is hazy.

Mr. FOGARTY. Did you give in your letter a list of justifications for this $100,000 for the management staff?

General VOGEL. Mr. Fogarty, frankly, it is too far back, and I would have to completely refresh my mind. I do not remember more than just the vague basis of it, and it has been indicated that the correspondence will be placed into the record.

Mr. FOGARTY. Do you have that letter, Mr. Wagner, in the files?

Mr. WAGNER. That correspondence, I believe, has been called for in the record.

General VOGEL. I think it is all a matter of record.

Mr. FOGARTY. Did you appear before the Bureau of the Budget?

General VOGEL. Yes, sir; and so did all these other people.

Mr. FOGARTY. Did you discuss this request of $100,000 before the Bureau of the Budget?

General VOGEL. I cannot remember, out of all the things which were discussed; I cannot possibly recall.

Mr. FOGARTY. You cannot recall this one item which is so important to you?

General VOGEL. I presume it was discussed, but I cannot specifically recall it.

Mr. FOGARTY. This is the one thing upon which you disagree—one of the few things that you disagree with the other members of the Board on.

General VOGEL. I do not consider it, sir, to be of the importance and magnitude that you give it.

Mr. FOGARTY. Well, maybe it is not, but it seems to me, sitting on this side of the table, that I have never seen anything of any greater importance to a person on that side of the table, as you gave it when you insisted on being heard, in opposition to the other members of your Board.

General VOGEL. Let me say this: There have been several meetings of the staff of the Bureau of the Budget with our staff, and I think we discussed everything which was in the budegt. Maybe, Mr. Wagner, can state whether this was discussed.

Mr. WAGNER. I do not recall that this was discussed, at TVA's meeting with the Bureau of the Budget when our original budget was

discussed. I was in the group that went to the Bureau of the Budget when we presented our original budget. That was the only time that I have appeared before the Bureau of the Budget. There may have been informal discussions of this item between our budget office and their staff, but I do not know that it was discussed then.

Mr. FOGARTY. Do you mean to tell me that the Bureau of the Budget, General, put this line item of $100,000 in the budget on the basis of your original letter to the Bureau of the Budget?

General VOGEL. As a result of the letter; yes, sir.

Mr. FOGARTY. That is the only contact you had in regard to it?

General VOGEL. Oh, no; I do not mean to say that. There were discussions, off and on, of course, between members of the budget staff and myself, and I think our staff, but I cannot put my finger on any particular discussion on any particular day.

Mr. FOGARTY. Did you tell the representatives of the Bureau of the Budget, or anyone in the Bureau of the Budget, that you did not think this government relations and economics staff was necessary, and that it ought to be cut out?

General VOGEL. I do not think so.

Mr. FOGARTY. You never did?

General VOGEL. I do not think so; I do not recall.

Mr. FOGARTY. I just do not know what to think. I have never seen anything like this presented by the Bureau of the Budget before, and the more I hear about it, and the more I keep looking into it, it looks to me as if there is a pure case of unadulterated politics in the Bureau of the Budget.

General VOGEL. Oh, no.

Mr. FOGARTY. It appears to me that it is a pure case of unadulterated politics in the Bureau of the Budget in inserting this line item of undistributed contingencies of $100,000, and you say that they are leaving it up to the Congress to make the decision.

I never heard of that before.

Has this committee received any letter from the Bureau of the Budget saying, in effect, that there has been some disagreement on the Board, and "we are putting in two line items, and you may make the decision as to which one you want?"

Has there been any letter to this committee on that, from the Bureau of the Budget?

Has there been a letter received by this committee from the Bureau of the Budget saying "because of some disagreement on the part of the Board of Directors of TVA, we are including two line items in this budget, and you take your choice?"

The CLERK. No, sir.

Mr. FOGARTY. There have been no instructions from the Bureau of the Budget to this committee?

The CLERK. No, sir.

Mr. FOGARTY. And there has been no suggestion by the Bureau of the Budget?

The CLERK. No, sir.

Mr. FOGARTY. Who made the suggestion that the Bureau of the Budget said that it would be up to the Congress to make this decision?

General VOGEL. I think we have had that in a letter; have we not?

Mr. WAGNER. The Bureau of the Budget did mention this contingency item in a letter which they sent to the TVA Board, addressed

to General Vogel, and I believe that is one of the letters which the committee has asked for.

General VOGEL. I think that is the whole basis. I think it is all there.

Mr. FOGARTY. I have never heard of anything like that before.

Mr. PHILLIPS. Maybe we ought to read the letter, and see what it really says.

Mr. FOGARTY. You can read it later.

General, you made the statement 2 or 3 times that you have been a member of the Board, or Chairman of the Board, for 8 months; is that correct?

General VOGEL. From September 1.

Mr. FOGARTY. You further stated that you have never been able to find out yet what this government relations and economics staff does.

General VOGEL. I told you of some of the things that they have done, but I have never said——

Mr. FOGARTY. I put that down one place where you said you had not been able to find out what they do.

General VOGEL. I mean in its entirety.

Mr. FOGARTY. You have been a member of the Board for 8 months and Chairman of the Board of Directors, and it is impossible for you to find out who these members are, and what they do?

General VOGEL. Oh, no. Of course, I know who they are.

Mr. FOGARTY. You made a flat statement that you have not been able to find out what they do.

General VOGEL. I did not say that I do not know who they are.

Mr. FOGARTY. You said you have not been able to find out what they do.

General VOGEL. I should perhaps, interpret that to say: What the importance is of what they do.

Mr. FOGARTY. Well, that is a big difference.

General VOGEL. Well, perhaps it is.

Mr. FOGARTY. I thought it was inconceivable that a member of a board, being there 7 or 8 months, could not find out what they did that it would be inconceivable that a member of the Board of Directors, no matter whether you are Chairman of the Board or not, could not find out what these people do.

General VOGEL. I do not think I have any other answer.

Mr. FOGARTY. What steps have you taken to find out what they do?

General VOGEL. I think the best I can answer that is to say, as I stated originally, that I knew they were engaged in certain esoteric studies, and that they were carrying on economic studies designed to certain ends.

I do not mean that I am entirely ignorant of the character of what they do, or what some of the details are, but I have not seen the necessity nor the importance of it.

Mr. FOGARTY. The inference which you leave on the record is that all they are doing is compiling reports which do not mean much, as far as the operations of TVA is concerned.

General VOGEL. Well, that is pretty much my opinion.

Mr. FOGARTY. Have you ever tried to find out what else they do besides compiling various reports, or how many man-hours are spent by this staff on compiling reports?

General VOGEL. Mr. Fogarty, I would like to say this: I am one man in a very large organization. I have been trying to find out a lot of things, and a good many things I have found out; but a good many things I have been precluded from finding out because of time, and not because of the desire on the part of anyone to conceal or hold up information.

The people at TVA are honest and straightforward people. Please do not let it be thought that I am trying to intimate otherwise, but I do say that I am only one man, and the thing I have come before you gentlemen today to request is simply assistance in getting the kind of data which I feel is necessary for the general manager, for me, and for the other members of the board in order that all may perform their jobs a little more effectively.

Mr. FOGARTY. That clears the air a little, generally, but the way you started out and the expression you used, you seemed to infer that because you were in the minority on this Board at this particular time, that had something to do with it.

The Congress established TVA. TVA was not created by the executive branch of the Government. It was created by the Congress.

General VOGEL. You are quite right, sir.

Mr. FOGARTY. The Congress prescribed, as I understand it, that the Board of Directors would be appointed in staggered terms for a good purpose, and you find yourself in the minority, and will be, perhaps, because of your way of thinking, until time takes care of that one way or the other, but I thought that you were inferring that because you were in the minority, you could not find out the answers to some of these questions, which you had about this particular staff in Government relations and economics.

General VOGEL. May I say this?

Mr. FOGARTY. You have cleared it up to my satisfaction.

General VOGEL. I am trying to clear it up still further. The implication has been that I have said I am a minority in everything. I am not. I clearly stated, when I began my statement, that in 95 percent, at least, of all things discussed, my colleagues and I are in unanimous agreement, but also, that as all human beings must disagree occasionally, we do disagree on some very important things.

Mr. RABAUT. That is natural.

General VOGEL. This is one small point, a $100,000 item out of a budget of about $30 million, on which we disagree.

Mr. FOGARTY. But, it is the most unusual thing, as far as I am concerned, in this budget presentation, and I am sure it is to the rest of the members of the committee, because I do not believe they have seen anything like this before in a budget.

General VOGEL. If it is going to create that much difficulty——

Mr. FOGARTY. It does not sit well with me, General. That is, speaking very plainly. I am not blaming you for anything, but I am blaming the Bureau of the Budget for giving to this committee such a choice that we know nothing about.

General VOGEL. I think it would be wrong to blame the Bureau of the Budget.

The committee has nothing before it on this. The Bureau put this other line item in to give this committee a choice of these two systems.

As I say, the only thing we have is the communication on it, which is an open matter. I want to be sure I am correct in that and that it is in the referenced letter.

Mr. WAGNER. General Vogel, I don't recall the exact terms of the letter on that point.

Mr. VOGEL. I am frankly confused, but I think it is.

Mr. PHILLIPS. The most unusual thing is that a Government employee should ask for a reduction in the budget of his agency.

Mr. FOGARTY. If this other line item had not been in here, if this undistributed contingency fund of $100,000 was not put in here for some purpose, and through questioning you, Mr. Wagner, and others it was brought out, the facts were brought out that some of these people in this Government Relations and Economics Staff were not needed, that perhaps with a reshuffling within the TVA itself some of these things could have been worked out, I perhaps would have gone along with you.

But the way it was presented to this committee, in such an unusual way, it just looks bad to me.

Mr. VOGEL. I regret it was presented in that unusual way because I tried to work this out with Mr. Wagner and with the Board.

Mr. Wagner could perhaps explain in his own words that I told him I would like to work out a solution.

Mr. FOGARTY. As you said, he is under the supervision of the Board. The Board happens to be made up of three men.

On this particular item you are in the minority and he is accepting the views of the majority of the Board.

When this bill is written it will be based on the majority opinion of this committee, and the majority rules in the Congress of the United States and almost everywhere we go.

Every time I have been in the minority I have been licked many times, but I took that licking and went along. I came back another day.

Mr. RABAUT. I can understand why the Congress is shocked as I think this thing through.

For instance, if we have a view of our own up on the floor, and you are the chairman of a committee, and the floor overrides you, and you go to the conference representing the House, you have to submerge your personal view and go to the House and champion the views of the floor, as was done last week by Mr. Murray.

Mr. Murray was dead against the pay bill. Still he went over there and took the views of the House who voted other than he wanted it to be.

We are used to that.

To wind this up here, we did not get a statement from Dr. Curtis and Dr. Paty, the other two directors.

I wonder if they would like to submit a statement for the record as to this matter. We will not keep the committee longer.

Dr. Curtis and Dr. Paty consider that their views on this matter are set forth in the letter of December 15, 1954, to Mr. Hughes, Director of the Bureau of the Budget, which was signed by General Vogel in behalf of the members of the Board.

The letter has been made part of the record of this hearing.

Mr. WAGNER. May I say just one word here to clear up one point?

Mr. RABAUT. Make it very brief.

Mr. WAGNER. The impression may have been left from this record that the Government Relations and Economics Staff is the only management tool available to the General Manager. I simply want to say that is not true.

We have an integrated management arrangement. As I told you, I think it works well. General Vogel suggested that I might say something in my own words about his proposal for a management staff. It is true that he has discussed with me his suggestions that we establish a management staff.

It has been discussed with the other Board members, too. They did not concur.

In order that the record may be clear as to my position, I have not recommended one for the reasons which I enumerated earlier.

Mr. RABAUT. Thank you, gentlemen.

We will resume tomorrow morning at 11 o'clock. At that time we will have the Atomic Energy Committee.

63240—55——23

THURSDAY, MAY 26, 1955.

ATOMIC ENERGY COMMISSION

WITNESSES

LEWIS L. STRAUSS, CHAIRMAN
WILLARD F. LIBBY, COMMISSIONER
THOMAS E. MURRAY, COMMISSIONER
JOHN VON NEUMANN, COMMISSIONER
K. E. FIELDS, GENERAL MANAGER
R. W. COOK, DEPUTY GENERAL MANAGER
A. TAMMARO, ASSISTANT GENERAL MANAGER FOR RESEARCH AND INDUSTRIAL DEVELOPMENT
WILLIAM MITCHELL, GENERAL COUNSEL
DON S. BURROWS, CONTROLLER
J. C. JOHNSON, DIRECTOR, DIVISION OF RAW MATERIALS
E. J. BLOCH, DIRECTOR, DIVISION OF PRODUCTION
COL. V. G. HUSTON, ACTING DIRECTOR, DIVISION OF MILITARY APPLICATION
W. K. DAVIS, DIRECTOR, DIVISION OF REACTOR DEVELOPMENT
DR. T. H. JOHNSON, DIRECTOR, DIVISION OF RESEARCH
DR. JOHN C. BUGHER, DIRECTOR, DIVISION OF BIOLOGY AND MEDICINE
OSCAR S. SMITH, DIRECTOR, DIVISION OF ORGANIZATION AND PERSONNEL
JOHN A. DERRY, DIRECTOR, DIVISION OF CONSTRUCTION AND SUPPLY
F. J. McCARTHY, JR., ASSISTANT CONTROLLER FOR BUDGETS
J. A. MILLER, DEPUTY BUDGET OFFICER

OPERATING EXPENSES

Amounts available for obligation

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663, except for allocations to National Science Foundation, Department of the Air Force, Department of the Navy, and Department of the Army)

	1954 actual	1955 estimate	1956 estimate
Appropriation or estimate	$891,781,000	$1,098,962,300	$1,045,000,000
Transferred to "Ordnance and facilities, Navy," pursuant to Public Law 149	−5,298,000		
Adjusted appropriation or estimate	886,483,000	1,098,962,300	1,045,000,000
Reappropriation of prior year balance	75,779,373	73,977,456	259,447,000
Unobligated balance transferred from "Plant and equipment, Atomic Energy Commission," pursuant to 1956 appropriation act			220,804,000
Reimbursements from other accounts	468,447	498,000	272,000
Total available for obligation	962,730,820	1,173,437,756	1,525,523,000
Balance reappropriated for subsequent year	−73,977,456	−259,447,000	
Obligations incurred	888,753,364	913,990,756	1,525,523,000
Comparative transfer from "Ships and facilities, Navy"	1,300,000		
Comparative transfer to "Research and development, Army"	−794,000		
Total obligations	889,259,364	913,990,756	1,525,523,000

Obligations by activities

Description	1954 actual	1955 estimate	1956 estimate
Costs by activities:			
1. Source and fissionable materials	$417,599,302	$674,919,000	$947,458,000
2. Weapons	218,119,230	226,386,000	271,148,000
3. Reactor development	87,603,074	101,095,000	134,582,000
4. Physical research	38,612,424	40,253,000	45,720,000
5. Biology and medicine	24,936,611	27,000,000	27,000,000
6. Community	−1,249,802	−2,098,000	−2,217,000
7. Program direction and administration	33,455,211	33,353,000	33,210,000
8. Security investigations	12,592,903	9,580,000	5,720,000
Total operating costs	831,668,953	1,110,488,000	1,462,621,000
Adjustment of prior year costs	3,604,403	−4,418,000	
Increase or decrease (−) in—			
Inventories	−4,243,370	12,080,000	14,467,000
Working capital and other adjustments	−47,035,443	−17,780,842	−9,885,000
Obligated balances	104,796,374	−186,876,402	58,048,000
Subtotal	888,790,917	913,492,756	1,525,251,000
Reimbursable obligations	468,447	498,000	272,000
Total obligations	889,259,364	913,990,756	1,525,523,000

Obligations by objects

Object classification	1954 actual	1955 estimate	1956 estimate
ATOMIC ENERGY COMMISSION			
Total number of permanent positions	7,056	6,813	6,598
Full-time equivalent of all other positions	21	33	33
Average number of all employees	6,489	6,413	6,396
Number of employees at end of year	6,195	6,475	6,475
Average salaries and grades:			
Grades established by the AEC equivalent to general schedule grades:			
Average salary	$5,314	$5,482	$5,595
Average grade	GS–7.8	GS–8.0	GS–8.1
11 Personal services:			
Permanent positions	$34,538,592	$35,044,395	$35,548,000
Positions other than permanent	173,868	235,000	235,000
Regular pay in excess of 52-week base	132,720	134,505	137,000
Payment above basic rates	1,206,251	1,804,000	2,267,000
Other payments for personal services	11,000	15,000	15,000
Total personal services	36,062,431	37,232,900	38,202,000
21 Travel	2,120,749	2,564,130	3,070,000
22 Transportation of things	3,916,569	4,465,200	4,976,000
23 Communication services	2,773,808	2,891,000	2,897,350
24 Rents and utility services	20,970,274	178,818,079	250,470,522
25 Printing and reproduction	263,060	253,720	252,720
26 Other contractual services	588,311,718	417,605,066	829,759,480
27 Services performed by other agencies	16,995,226	10,898,739	8,053,819
31 Supplies and materials	179,671,485	233,230,790	361,262,821
41 Grants, subsidies, and contributions	838,393	733,000	733,000
42 Refunds, awards, and indemnities	7,400	79,250	65,500
43 Taxes and assessments	157,338	176,400	181,250
99 Unvouchered	207	100,000	100,000
Total obligations	852,088,658	889,048,274	1,500,024,462
ALLOCATION TO NATIONAL SCIENCE FOUNDATION			
Total number of permanent positions	8	8	8
Average number of all employees	2	2	2
Number of employees at end of year			
Average salaries and grades:			
General schedule grades:			
Average salary	$4,616	$4,616	$4,616
Average grade	GS–7.3	GS–7.3	GS–7.3
11 Personal services:			
Permanent positions	$6,704	$8,175	$8,300
Positions other than permanent	663		
Regular pay in excess of 52-week base	31		
Payment above basic rates	119		
Total personal services	7,517	8,175	8,300

Obligations by objects—Continued

Object classification	1954 actual	1955 estimate	1956 estimate
ALLOCATION TO NATIONAL SCIENCE FOUNDATION—continued			
04 Communication services	$97	$68	$7
06 Printing and reproduction	385	500	50
07 Other contractual services	285	800	80
08 Supplies and materials	1,883	290	32
Total obligations	10,167	9,833	10,00
ALLOCATION TO GENERAL SERVICES ADMINISTRATION			
08 Supplies and materials	458,240		
ALLOCATION TO DEPARTMENT OF AGRICULTURE			
Total number of permanent positions	5	6	
Full time equivalent of all other positions	1	1	
Average number of all employees	12	10	
Number of employees at end of year	8	7	
Average salaries and grades:			
General schedule grades:			
Average salary	$5,748	$5,749	$5,77
Average grade	GS–10.2	GS–9.5	GS–9
01 Personal services:			
Permanent positions	$55,995	$51,785	$50,78
Positions other than permanent	5,097	3,000	4,00
Regular pay in excess of 52-week base	48	115	11
Total personal services	61,140	54,900	54,90
02 Travel	2,581	4,400	4,40
03 Transportation of things	1,131	500	50
04 Communication services	35	200	20
07 Other contractual services	529		
Services performed by other agencies	7,827	11,200	11,20
08 Supplies and materials	10,265	3,800	3,80
15 Taxes and assessments	398		
Total obligations	83,906	75,000	75,00
ALLOCATION TO BUREAU OF THE CENSUS, DEPARTMENT OF COMMERCE			
Average number of all employees	7		
Number of employees at end of year			
01 Personal services:			
Positions other than permanent	$31,427		
Payment above basic rates	1,481		
Total personal services	32,908		
02 Travel	221		
04 Communication services	45		
05 Rents and utility services	88		
06 Printing and reproduction	310		
07 Other contractual services	4,953		
08 Supplies and materials	6,989		
15 Taxes and assessments	1		
Total obligations	45,515		
ALLOCATION TO NATIONAL BUREAU OF STANDARDS, DEPARTMENT OF COMMERCE			
07 Other contractual services	224,494	1,149,300	812,60
ALLOCATION TO COAST AND GEODETIC SURVEY, DEPARTMENT OF COMMERCE			
Total number of permanent positions		2	
Number of employees at end of year			
Average salaries and grades:			
General schedule grades:			
Average salary		$4,440	
Average grade		GS–6.1	
01 Personal services:			
Permanent positions		1,758	
Payment above basic rates		876	
Total personal services		2,634	

Obligations by objects—Continued

Object classification	1954 actual	1955 estimate	1956 estimate
ALLOCATION TO COAST AND GEODETIC SURVEY, DEPARTMENT OF COMMERCE—continued			
22 Travel		$1,926	
24 Communication services		20	
27 Other contractual services		200	
28 Supplies and materials		220	
Total obligations		5,000	
ALLOCATION TO DEPARTMENT OF THE ARMY			
Total number of permanent positions	121	89	89
Average number of all employees	116	87	87
Number of employees at end of year	111	82	82
Average salaries and grades:			
General schedule grades:			
Average salary	$4,717	$4,884	$4,976
Average grade	GS–6.9	GS–7.2	GS–7.2
Ungraded positions: Average salary	$3,750	$3,895	$3,939
11 Personal services:			
Permanent positions	$493,159	$396,135	$400,257
Regular pay in excess of 52-week base	1,501	1,112	1,124
Payment above basic rates	7,330	6,310	4,000
Total personal services	501,990	403,557	405,381
22 Travel	34,501	40,600	32,000
23 Transportation of things	277,855	1,439,145	1,388,472
24 Communication services	4,793	5,600	5,600
25 Rents and utility services	383,571	415,980	415,980
27 Other contractual services	16,906,494	5,382,332	10,872,605
28 Supplies and materials	12,407	11,200	9,200
Total obligations	18,121,611	7,698,414	13,129,238
ALLOCATION TO DEPARTMENT OF THE NAVY			
Total number of permanent positions	762	104	17
Average number of all employees	746	100	16
Number of employees at end of year	106	16	16
Average salaries and grades:			
General schedule grades:			
Average salary	$4,466	$4,383	$4,050
Average grade	GS–6.3	GS–6.3	GS–6.2
Ungraded positions: Average salary	$3,926	$4,118	
11 Personal services:			
Permanent positions	$3,610,461	$477,500	$65,400
Regular pay in excess of 52-week base	500	300	300
Payment above basic rates	63,987	11,300	2,900
Total personal services	3,674,948	489,100	68,600
22 Travel	55,744	9,400	3,900
23 Transportation of things	43,657	12,000	
24 Communication services	990	600	500
27 Other contractual services	3,387,642	5,641,405	4,230,500
28 Supplies and materials	843,420	110,602	24,880
35 Taxes and assessments	17,500	3,000	
Total obligations	8,023,901	6,266,107	4,328,300
ALLOCATION TO DEPARTMENT OF THE AIR FORCE			
11 Personal services: Payment above basic rates	12,364		
22 Travel	532		
24 Communication services	75		
27 Other contractual services	41,902	157,077	
28 Supplies and materials	30,563		
35 Taxes and assessments	143		
Total obligations	85,579	157,077	
ALLOCATION TO BUREAU OF LAND MANAGEMENT, DEPARTMENT OF THE INTERIOR			
Average number of all employees	1		
Number of employees at end of year			
11 Personal services: Positions other than permanent	762		
35 Taxes and assessments	4		
Total obligations	766		

Obligations by objects—Continued

Object classification	1954 actual	1955 estimate	1956 estimate
ALLOCATION TO GEOLOGICAL SURVEY, DEPARTMENT OF THE INTERIOR			
Total number of permanent positions	814	869	
Full-time equivalent of all other positions	60	61	
Average number of all employees	841	907	
Number of employees at end of year	939	1,110	
Average salaries and grades:			
General schedule grades:			
Average salary	$4,670	$4,722	
Average grade	GS-7.0	GS-7.0	
01 Personal services:			
Permanent positions	$3,661,350	$4,012,000	
Positions other than permanent	176,874	177,000	
Regular pay in excess of 52-week base	14,953	15,600	
Payment above basic rates	46,918	48,900	
Other payments for personal services	1,213		
Total personal services	3,901,308	4,253,500	
02 Travel	443,985	586,000	
03 Transportation of things	66,319	76,200	
04 Communication services	68,539	77,400	
05 Rents and utility services	63,815	79,100	
06 Printing and reproduction	98,218	185,000	
07 Other contractual services	1,995,853	1,364,181	
Services performed by other agencies	151,334	68,700	
08 Supplies and materials	757,087	894,899	
11 Grants, subsidies, and contributions	4		
13 Refunds, awards, and indemnities	152		
15 Taxes and assessments	15,403	16,600	
Subtotal	7,562,017	7,601,580	
Deduct charges for quarters and subsistence	366		
Total obligations	7,561,651	7,601,580	
ALLOCATION TO BUREAU OF MINES, DEPARTMENT OF THE INTERIOR			
Total number of permanent positions	304	246	
Full-time equivalent of all other positions	27	6	
Average number of all employees	306	227	
Number of employees at end of year	303	220	
Average salaries and grades:			
General schedule grades:			
Average salary	$4,930	$5,036	
Average grade	GS-7.3	GS-7.4	
Ungraded positions: Average salary	$3,646	$3,862	
01 Personal services:			
Permanent positions	$1,210,596	$978,251	
Positions other than permanent	122,266	25,403	
Regular pay in excess of 52-week base	5,456	4,324	
Payment above basic rates	45,662	23,655	
Total personal services	1,383,980	1,031,633	
02 Travel	53,074	35,856	
03 Transportation of things	41,816	21,224	
04 Communication services	3,050	2,795	
05 Rents and utility services	10,957	6,328	
06 Printing and reproduction	526	527	
07 Other contractual services	210,024	286,113	
08 Supplies and materials	805,887	509,614	
13 Refunds, awards, and indemnities	958	527	
15 Taxes and assessments	13,986	8,457	
Total obligations	2,524,258	1,903,074	
ALLOCATION TO FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR			
Total number of permanent positions	4	13	
Full-time equivalent of all other positions	2	1	
Average number of all employees	5	12	
Number of employees at end of year	2	10	
Average salaries and grades:			
General schedule grades:			
Average salary	$5,068	$4,140	
Average grade	GS-8.3	GS-6.4	
Ungraded positions: Average salary		$3,076	

Obligations by objects—Continued

Object classification	1954 actual	1955 estimate	1956 estimate
ALLOCATION TO FISH AND WILDLIFE SERVICE, DEPARTMENT OF THE INTERIOR--continued			
01 Personal services:			
Permanent positions	$16,796	$44,224	$28,407
Positions other than permanent	5,045	2,185	2,696
Regular pay in excess of 52-week base	50	170	109
Total personal services	21,891	46,579	31,212
02 Travel	266	500	300
03 Transportation of things	21	100	20
04 Communication services	126	250	130
05 Rents and utility services	427	889	500
06 Printing and reproduction		700	500
07 Other contractual services	288	6,205	2,500
08 Supplies and materials	1,796	7,529	4,778
15 Taxes and assessments	88	60	60
Total obligations	24,903	62,812	40,000
ALLOCATION TO PUBLIC HEALTH SERVICE, DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE			
Total number of permanent positions	1	2	
Average number of all employees		2	
Number of employees at end of year	1	2	
Average salaries and grades:			
General schedule grades:			
Average salary		$4,955	
Average grade		GS-7.0	
01 Personal services:			
Permanent positions	$2,965	$12,381	
Regular pay in excess of 52-week base		19	
Total personal services	2,965	12,400	
02 Travel	1,375	1,885	
03 Transportation of things	1,250		
04 Communication services	25		
06 Printing and reproduction	100		
Total obligations	5,715	14,285	
SUMMARY			
Total number of permanent positions	9,075	8,152	$7,698
Full-time equivalent of all other positions	111	102	102
Average number of all employees	8,525	7,760	7,498
Number of employees at end of year	7,665	7,922	7,671
Average salaries and grades:			
Grades established by the AEC equivalent to general schedule grades:			
Average salary	$5,314	$5,482	$5,595
Average grade	GS-7.8	GS-8.0	GS-8.1
General schedule grades:			
Average salary	$5,199	$5,370	$5,482
Average grade	GS-7.6	GS-7.7	GS-7.9
Ungraded positions: Average salary	$3,875	$3,952	$3,881
01 Personal services:			
Permanent positions	$43,596,618	$41,026,604	$40,430,592
Positions other than permanent	516,002	442,588	444,214
Regular pay in excess of 52-week base	155,259	156,145	155,663
Payment above basic rates	1,384,112	1,895,041	2,329,746
Other payments for personal services	12,213	15,000	15,000
Total personal services	45,664,204	43,535,378	43,375,215
02 Travel	2,713,028	3,244,697	3,728,190
03 Transportation of things	4,348,618	6,014,369	6,445,234
04 Communication services	2,851,583	2,977,933	2,979,686
05 Rents and utility services	21,429,132	179,320,376	250,950,019
06 Printing and reproduction	362,599	440,447	436,962
07 Other contractual services	611,084,182	431,592,679	846,167,859
Services performed by other agencies	17,154,387	10,978,639	8,132,819
08 Supplies and materials	182,600,022	234,768,944	362,209,792
11 Grants, subsidies, and contributions	838,397	733,000	733,000
13 Refunds, awards, and indemnities	8,510	79,777	65,500
15 Taxes and assessments	204,861	204,517	198,724
Unvouchered	207	100,000	100,000
Subtotal	889,259,730	913,990,756	1,525,523,000
Deduct charges for quarters and subsistence	366		
Total obligations	889,259,364	913,990,756	1,525,523,000

Analysis of expenditures

(Balances for June 30, 1954, are as certified under sec. 1311, Public Law 663, except for allocations to National Science Foundation, Department of the Air Force, Department of the Navy, and Department of the Army)

	1954 actual	1955 estimate	1956 estimate
Obligated balance brought forward	$663,149,265	$767,949,049	$581,072,647
Adjustment in obligations of prior years	3,410		
Obligations incurred during the year	888,753,364	913,990,756	1,525,323,000
	1,551,906,039	1,681,939,805	2,106,395,647
Reimbursements	−468,447	−498,000	−272,000
Obligated balance carried forward	−767,949,049	−581,072,647	−639,120,647
Total expenditures	783,488,543	1,100,369,158	1,467,003,000

Mr. RABAUT. The committee will come to order.

We have for consideration today the budget request of the Atomic Energy Commission, and we are pleased to have with us Mr. Lewis L. Strauss, Chairman, United States Atomic Energy Commission, together with other members of the Commission, and representatives of the various divisions of the Commission.

GENERAL STATEMENT

Mr. Strauss, I presume you have a statement which you would like to present to the committee at this time, and we shall be glad to hear from you.

Mr. STRAUSS. Mr. Chairman, I have a prepared statement which I would like to have inserted into the record, and then I would like to go over the program with you in an off-the-record discussion.

Mr. RABAUT. We shall be glad to have your prepared statement, Mr. Strauss.

(The statement referred to follows:)

Mr. Chairman, let me first express my appreciation to you and members of your committee for the opportunity you have just given us to discuss, in an executive session, where we stand today in the atomic energy program and what appears immediately ahead. This has provided an opportunity, consistent with security, to spell out in some detail what progress has been made to date. The information which follows is an unclassified version of my statement, suitable for the published record.

WHAT BUDGET ESTIMATES COVER

The budget estimates we are discussing today cover only operating expenses of the atomic energy program, for which an appropriation of $1,045 million is requested for fiscal year 1956. We also will present to this committee very shortly the capital side of the budget, the legislative authorization for which is presently being considered by the Joint Committee on Atomic Energy. As you know, the Atomic Energy Act of 1954 requires for the first time that legislative authorization be enacted for our construction programs. Hearings have been held by the Joint Committee on the various items and shortly after a bill is approved by the Congress we would expect the President to submit a supplemental estimate covering the capital items.

PRIMARY MISSION

Since taking over responsibility for the atomic energy program from the War Department in 1947, the Commission's primary efforts have been aimed at producing the key materials needed for weapons, and at improving our weapon designs. The broad capacity base now established is a source of great satisfaction, and represents a potent resource for both war and peace.

PLANT AND EQUIPMENT

During the 5 years ended last June 30, the Commission's investment in plant and equipment grew from 1.9 to 5.7 billion dollars. The current year will bring an increase of 0.9 to 6.6 billion dollars. Upon completion of the additions now authorized, our plant assets will be about 7.3 billion dollars. The greater part of this expansion was authorized by Congress in 1952, and it is the initial output from many of these plants which is bringing about the large production gains expected in 1956.

OTHER ACTIVITIES

While the greatest part of our plant and funds are directed to the production of weapons, there are other very important activities on which the Commission is engaged.

We are sponsoring basic research in nuclear physics, chemistry, and other allied physical sciences to learn the secrets of nuclear phenomena which are as yet unknown to us. We are ever aware of the fact that future progress is largely dependent upon increasing our knowledge of the fundamental nature of the materials and forces controlling the economic use of the energy locked in the atom.

We are engaged in providing measures for the protection of our workers and the public from the harmful effects of radioactivity.

We are developing the use of radiation for medical and biological purposes.

We are engaged in the development of nuclear powerplants for both civilian and military purposes.

And, under the provisions of the act passed in 1954, we are prepared to cooperate with the peoples of the free world in extending the peaceful benefits of atomic energy to all mankind.

I will now turn to some of the specific aspects of the program for which funds are being requested.

SOURCE AND FISSIONABLE MATERIALS PROGRAM

The procurement of uranium concentrates, their processing into uranium 235 and plutonium, and the fabrication of these and other materials into weapons, takes the largest share of our budgeted operating costs, representing 83 percent of the total costs estimated for 1956. These production and weapon activities account for 90 percent of the estimated increase for 1956 over the costs to be incurred in 1955.

The basis of all of our programs is the procurement of sufficient quantities of uranium ore. In 1956 we will be able to obtain substantially larger tonnages than in any previous year, and our goals for succeeding years have again been raised. The improved outlook for larger supplies increases the assurance that adequate uranium will be available for United States needs.

The United States is still dependent on uranium from overseas, but to a lesser degree than in earlier years. Our dependence on the output of a single mine in the Belgian Congo is now a thing of the past, although large tonnages are still expected from that source. The importance of this contribution of Belgium to the common security of the Western nations during the past decade can scarcely be overestimated, and we gratefully acknowledge it.

We now have other important stakes in Africa. In the Union of South Africa additional plants have come into operation to recover uranium as a byproduct of gold-mining operations, and shipments from that country continue to grow.

Small tonnages from Portugal continue, and initial shipments of uranium concentrates from Australia were received during the past year.

Taking all our overseas sources together, we find that their shipments to us in 1956 will register an impressive gain over 1955. Nevertheless, the increases anticipated from production in the United States and Canada are still more striking.

In the United States next year, ore will be processed from deposits not known to exist 2 or 3 years ago, primarily in New Mexico, Arizona, Colorado, Wyoming, and Utah. Exploration and prospecting have enlarged our reserves, and the mining industry is providing the added processing capacity, both at new sites and older mills, to make the United States one of the leading world producers.

The large gains in our own country should not let us overlook the rapid progress being made by our friends in Canada. In 1956 Canadian output will rise sharply and several large-scale undertakings now in progress promise to boost production in the following years.

PRODUCTION FACILITIES

In the conversion of ore concentrates into the special nuclear materials of uranium 235 and plutonium, expansion has also occurred. The major plant expansion authorized in 1952 is now being completed, and nearly all of the added plant capacity will be in operation before the end of 1956. Incorporated in our newer plants are many improvements which have served to increase the output obtained from each dollar of plant investment. The efforts to improve our production processes are continuing, and experience shows that they pay for themselves many times over in terms of what it costs to produce a pound of uranium 235 or plutonium. In the brief 3 years or so since some of these plants were designed, we have already found ways of increasing their "design capacity" by significant amounts, and, similarly, we have learned how to enlarge the output of many older plant units.

The 8 graphite reactors at Hanford and the 5 heavy water reactors at Savannah River will all be contributing in 1956 to our output of reactor products. Improved performance and the additions made to capacity will bring record production.

Similarly, in the completed gaseous diffusion plants at Oak Ridge and Paducah, and in the plant still under construction at Portsmouth, Ohio, the production achievements of 1955 will also be surpassed in 1956.

Although we also produce certain other materials, plutonium and uranium 235 account for most of our costs.

WEAPONS

Each year since 1947 has seen important advances in weapons technology. Much of our progress has been concerned with the energy yield of weapons. The nominal yield of our original fission weapons was equivalent to that of 20,000 tons of TNT. In speaking of thermonuclear weapons today, we deal in units of a million tons of TNT.

If maximizing weapon yield were the only objective in weapon design, one might consider that fission weapons had already become obsolete. On the contrary, numerous other objectives assure that fission weapons will continue to serve a great variety of key roles. Use of fission weapons has enabled us to stockpile a wide variety of weapons, adapted to various methods of delivery. Their weights, sizes, and yields cover a wide range. They are deliverable by aircraft, missiles, and artillery. In developing such a stockpile we have learned to increase the energy obtainable from given quantities of fissionable material. A continuing objective is the most efficient design for each specialized use. The recent high-altitude shot at the Nevada test site suggests a defensive antiaircraft use, which is just one of the new applications on which we are at work.

Turning to thermonuclear weapons, you will recall that a thermonuclear device was first detonated in the Marshall Islands in November 1952. The device was not a deliverable weapon, but pointed the way to designs tested a year ago at Operation Castle which are enabling us to achieve more rapid stockpile growth.

These achievements have been pioneered by our weapons laboratories at Los Alamos, N. Mex., and Livermore, Calif., and engineered by our laboratory at Sandia, N. Mex. An essential element which can scarcely be overemphasized, is the testing of the principles and designs, which we do at the test sites in Nevada and in the Marshall Islands of the Pacific. Without the opportunity to confirm and explore design concepts at each stage of development, final success could never be assured.

Finally, it is important to emphasize that the development of atomic weapons is essentially a joint undertaking in which we receive the closest cooperation from the Department of Defense. Generally speaking, the Commission's responsibilities relate to the nuclear portions of weapons systems, while the other elements involved in delivery, such as aircraft or missiles, are responsibilities of the Department of Defense. Our goals, in terms of both quantities and design objectives, are set on the basis of forecast requirements by the Department of Defense. Actual production of all types of atomic weapons is in accordance with schedules approved each year by the President.

NUCLEAR PROPULSION

The accomplishments discussed so far relate primarily to our weapons contribution to the national security. Now let us turn to another contribution, whose significance is largely in the future. This is the work done in nuclear propulsion. Rapid strides have been made in the development of reactors for propulsion of naval ships and military aircraft.

The successful sea trials of the first nuclear-powered submarine, the *Nautilus*, this past winter marked the end of the first phase in the development of naval propulsion reactors. A second nuclear-powered submarine, the *Sea Wolf*, will be launched this summer. Dock and sea trials will follow. The land prototypes of these reactors, at the National Reactor Testing Station in Idaho and at West Milton, N. Y., will be operated to provide additional information for the improvement of these and other reactor designs.

Increasing attention is now being given to development of more advanced naval reactor designs, including both submarine and surface ship applications, aimed at providing power plants having a wide range of power output. The ultimate promise is propulsion units for ships of all sizes, to permit an entire task force to operate at full speed without refueling for an indefinite period.

We have been greatly encouraged by developments during the past year in the aircraft nuclear propulsion program. Experimental results warrant a sharp intensification and expansion of these efforts.

REACTOR PROGRAM

In cooperation with the Army, work is being carried on to develop small power reactors for specialized uses by all of the armed services. One such project is a reactor whose components could be transported to a remote site and there assembled to provide heat and electric power, thus eliminating dependence on transportation of coal or oil for this purpose, an advantage of special importance during war.

Thus, our reactor program includes developmental projects for all three of the armed services. In 1956 the costs for aircraft propulsion show the largest increase, and will exceed the costs for either the Navy or Army projects.

CIVILIAN POWER REACTOR DEVELOPMENT

As our production capacity has grown, it has become feasible to give more attention to the peacetime applications of atomic energy. In his United Nations speech of December 1953, the President turned the thoughts of the entire world to the hope of making atomic energy a boon to mankind everywhere, and pledged the cooperation of the United States to this end.

The necessary legal basis for the new emphasis on beneficial uses and wider participation has been provided by enactment of the Atomic Energy Act of 1954. In restating the charter for our program, the Congress removed a number of the prohibitions and obstacles embodied in the original act, and in their place substituted properly safeguarded procedures for extending participation in atomic energy matters in a number of ways.

Under the new act, the Commission has recently announced proposed regulations under which persons and organizations, public and private, may be licensed to own and operate reactors and other atomic energy facilities in the United States for authorized purposes. Such purposes include medical therapy, and research and development leading to industrial and commercial applications.

Under arrangements permitted by the earlier Atomic Energy Act, industry has already in several ways been participating in our efforts to develop reactor designs for economical production of electric power. Certain companies have made direct contributions of funds to particular reactor projects on which they are working as our contractors. A much larger number are engaged at their own expense in independent studies of reactor systems. Others are at work under subcontracts on the design and manufacture of various hardware components. These activities of industry are carried on in close cooperation with our AEC laboratories, and have provided important stimulus and impetus to our work.

Under the arrangements now permitted by the law, it is our hope and intention that industry will undertake at its own expense a larger and larger share of the commercial developmental responsibilities. In January we invited industry to submit proposals for developmental projects which would embody this principle. The responses to this first invitation are still being evaluated, but we are encouraged by the proposals submitted and believe that industrial and utility groups will henceforth be making an increasingly important contribution to the development of competitive nuclear power.

While we hope and expect that industry will take advantage of the provisions of the new Atomic Energy Act by moving into the development of power reactors with private funds, major obstacles stand in the way of industry shouldering the entire job. The fact is that proven designs for economically competitive power

reactors do not yet exist. Yet the national interest requires that this nation clearly establish and maintain world leadership in this field.

POWER REACTORS ACCELERATION PROGRAM

At this stage of development, however, the basic advances in technology are dependent on the work of the Commission. More than a year ago the Commission embarked on a so-called 5-year program covering the development of 5 technical approaches to an economical power reactor. Since that time work has proceeded rapidly on each of the five design concepts. During 1956 prototypes for 2 of the approaches will be placed in operation; 2 other prototypes will be under construction; and component development will be largely completed for the fifth. None of these protoypes in itself is expected to be a practical source of electric power in terms either of competitive costs or of amounts of power produced. We nevertheless expect that construction and experimental operation of these reactors will provide valuable data as to the courses to be followed in designing reactors which are truly competitive with conventional power plants at power costs in the United States.

In line with the President's atoms-for-peace program and the new emphasis in the Atomic Energy Act of 1954, the Commission has this year pushed ahead faster on civilian power than was contemplated a year ago. By so doing we believe that we are speeding up the attainment of competitive nuclear power and encouraging private industry to assume more rapidly a larger share of the technical responsibilities and financial burdens. At this stage the problems can best be solved by a joint attack, imaginative and hard hitting, by the technical forces of AEC laboratories and of American industry. Scientists and engineers must have latitude to adjust their efforts to experimental results, and to seize opportunities when they arise. We have sought to provide this flexibility in our 1956 budget by including an amount which would be available for cooperation with industry groups and to accelerate those portions of the Commission's program which can be profitably expanded. This is the amount set out in the budget justifications under the designation "Power reactors acceleration program."

RESEARCH

In our research programs in the physical and life sciences there are a great many problems to be solved. In both fields we encounter phenomena which lie outside all man's earlier experience.

Even our most practical, down-to-earth problems in the physical sciences involve, for example, finding out what happens to materials we wish to use at temperatures and radiation intensities far above the range of earlier interest.

Such basic materials as iron, copper, and steel, which have been used and studied by man for decades, are no longer suitable when we seek to build the heart of a reactor. We find that our needs are for materials such as zirconium, hafnium, beryllium, bismuth, and many other materials and alloys about which the engineering handbooks of yesterday can tell us very little. We need to study not only their metallurgy, but their nuclear properties as well.

Man's ability to bring about atomic fission, and more recently the thermonuclear reaction of atomic fusion, have been performed by the manipulation of neutrons, a part of the atom whose existence was not even suspected a few years before the war. In the years since the war, our scientists have identified several more types of nuclear particles. Each time we succeed in building a more powerful accelerator, still more particles are identified. As yet we must acknowledge that we are dealing with concepts which we only vaguely comprehend. We know, for example, that a uranium atom fissions, but we do not know why it fissions. We must devise still more effective instruments and hope that the genius of our scientists will permit them to piece together an explanation of what continues to be essentially a mystery; namely the nature of the forces and energy within the atom.

In view of the practical applications already devised for using neutrons, however, and of how very little we yet know about these and other nuclear particles, it is clear that only by basic research can the full promise of atomic energy be realized. This is the lesson of history.

BIOLOGY AND MEDICINE

In the life sciences, biology and medicine, our attention is directed to the problems which are peculiar to atomic energy. For the most part these prob-

lems relate to invisible alpha particles and beta and gamma radiations and their effects on the living tissues of plants, animals, and man.

In radiation, the byproducts of atomic energy, lurks potential danger. One of our primary responsibilities is to protect operating personnel and the general public from its deadly effects. By establishing rigorous safety procedures and standards and by adhering to them carefully, our plants and laboratories have all but eliminated radiation injuries in their activities.

The Commission's health and safety responsibilities are extended by the new Atomic Energy Act, however, to cover the activities of licensees. As more atomic-energy installations are built, the job of hazard evaluation will become more difficult. In the light of experience and new knowledge, present standards governing site selections will undoubtedly require gradual modification to enable reactors to serve more heavily populated areas. A related problem will be disposal of a growing volume of radioactive wastes. These matters will be receiving intensive study.

Prudence dictates that research also be directed to the development of drugs and other techniques by which to ameliorate the harmful effects of radiation and by which to promote recovery from radiation injury.

Not all the effects of radiation are harmful by any means. The medical uses of radioisotopes, as tracers for diagnosis, and as localized sources for radiation therapy, are growing in number each year. The Commission conceives its role in medicine as one of pioneering in critical areas of research for which its radiation facilities are unique. Our work in the field of cancer, for example, both at Brookhaven and the Argonne Cancer Hospital in Chicago, could not today be performed in any other institution.

In order to solve practical radiation problems, and to expand the beneficial uses of radiation, we must find out more exactly just what takes place in the living tissue and cells. We support basic research of this type when it is closely related to our own work. We assist other people's research by furnishing radioisotopes. To encourage the use of radioisotopes in cancer or other medical research and therapy, and for biological research, it is the Commission's policy to charge the user only 20 percent of the actual cost of supplying the materials.

Radioisotopes, of course, have come into widespread use in industry for hundreds of other purposes. The Commission manufactures and stocks a great variety of such isotopes at Oak Ridge, where each week the number of shipments runs into the hundreds. With the exception just noted, the prices charged enable the Commission to recover its full costs.

COMMUNITY

That part of our budget dealing with the management of the communities of Oak Ridge, Richland, and Los Alamos shows an operating surplus. It is our understanding that the Joint Committee on Atomic Energy will shortly hold hearings on a bill to dispose of the Richland and Oak Ridge communities. The Commission favors this change, although our budget estimates are based upon present ownership and operation of the two towns. Enactment of the legislation would have little effect on our fund requirements during 1956.

INTERNATIONAL ASPECTS

I would now like to touch briefly on the international aspects of the Commission's program. Under the President's atoms-for-peace program, a number of measures have already been undertaken to demonstrate our conviction that atomic energy offers a key to improved standards of living for all people. Such measures include the allocation by the President of 100 kilograms of special nuclear material for research use in foreign countries, pursuant to appropriate cooperative agreements.

The first such agreement was recently negotiated with the Government of Turkey, under which unclassified technical information will be exchanged and the United States will make available to Turkey slightly enriched uranium 235 for use in a research reactor.

As would be expected, the negotiation of more comprehensive bilateral agreements is well advanced with Canada, the United Kingdom, and Belgium, the nations which have been contributing their help to our atomic-energy efforts for the past 12 years or more. Negotiations for agreements covering cooperation in unclassified matters are in progress with eight other nations, and preliminary discussions have been held with still a dozen or so others.

To make widely available the unclassified knowledge already learned about atomic-energy matters, the Commission has made gifts to 14 nations of technical

libraries, consisting of copies of the very considerable number of documents, reports, and other technical papers which we have issued to depository libraries at key cities and universities in the United States. We have also initiated at Argonne National Laboratory a school for the training of foreign students in reactor technology, where already some 31 foreign students from 19 nations are enrolled and at study.

The United States has also taken the leading part in first proposing and making preparations for the International Conference on Peaceful Uses of Atomic Energy, to be held by the United Nations at Geneva, Switzerland, in August. The Commission is playing an important role in this conference, coordinating the technical portion of the United States participation. We hope that nations in all parts of the world will gain a lively sense of both the progress already achieved and the potentialities opening out before us. The United States will have many exhibits including a small research reactor operating on the exhibit grounds.

PROGRAM DIRECTION AND ADMINISTRATION

From the outset of the program, the Commission recognized that its varied and complex task would require the utilization of a great variety of talents. To this end, the operation of our laboratories and plants was placed in the hands of organizations which could bring to the Commission the production know-how of American industry and the scientific skills of our universities. These operating contractors now employ approximately 80,000 people on the Commission's program.

Considering the size and complexity of the atomic-energy enterprise, we have maintained the Government staff at a minimum level. Most of this group is engaged in the planning and execution of the program, and in supervising and coordinating the activities of our contractors. Others are engaged in protecting fissionable materials, doing geological exploration, and other operating work. You will note that the budget provides for a leveling off in the Commission's personnel at about 6,400 people. Some reductions in staff are made possible by the falling off of construction activities. These are offset, however, by increases in the number of people required to guard materials in shipment and storage, and by staff additions to discharge new responsibilities created by the Atomic Energy Act of 1954. These additions are primarily related to the licensing and inspection of atomic-energy activities undertaken by industry and to the exchange of information and assistance under cooperative agreements.

I have tried, Mr. Chairman, to summarize the major highlights of the atomic-energy program. Rather than attempt to discuss the budget figures, which we will get into shortly, I have attempted to sketch the background against which the budget figures, I hope, will have more meaning. This program is dynamic. While there are many large unknowns still to be solved, our progress to date provides the best encouragement. As we discuss the budget details, we will encounter a number of matters which have come up since this budget was prepared and which are necessary to undertake in 1956.

It may be helpful, Mr. Chairman, to consider that our main program activities fall into three general parts. First, the production of special nuclear materials and weapons, representing 83 percent of our estimated dollar costs in 1956. Secondly, our reactor program, including development of propulsion units for the Navy and Air Force, and electric power units for the Army, industry, and world-at-large. Thirdly, our research programs in the physical sciences, biology, and medicine.

Now, Mr. Chairman, the General Manager and staff are prepared to discuss the details of the budget estimates.

Mr. RABAUT. You may proceed, Mr. Strauss, off the record.

(Discussion off the record.)

Mr. RABAUT. We shall now recess for luncheon, and reconvene at 2 o'clock this afternoon.

AFTERNOON SESSION

Mr. RABAUT. The committee will come to order.

This morning, we had an off-the-record statement by the Chairman of the Commission, Mr. Lewis L. Strauss, and now we will have a statement from the other members of the Commission.

Who desires to testify at this time?

Mr. LIBBY. I will.

Mr. RABAUT. We will be pleased to hear from Commissioner Libby.

Mr. LIBBY. If the Chair will permit, I would like to ask Mr. Fields, the General Manager, to proceed with the detailed presentation of the budget, unless you have some general questions.

BIOGRAPHICAL BACKGROUND OF COMMISSIONER LIBBY

Mr. RABAUT. We would like to have for the record a statement from you as to your background and experience.

Mr. LIBBY. Very well; I shall be glad to give that, sir.

Mr. RABAUT. You may make a statement as to where you came from, and what position you occupy at this time, and cover your general background and experience.

Mr. LIBBY. I am a member of the Commission, and have been since October 5 of last year. I was formerly professor of chemistry at the University of Chicago. I am a professional chemist, teacher, and specialist in the field of nuclear chemistry.

I am originally from California, and worked during the war on the diffusion plant separation process development, and in protection from chemical attack.

Is that adequate, sir?

Mr. RABAUT. Where did you receive your education?

Mr. LIBBY. At the University of California, and in the California public school system.

Mr. RABAUT. What degrees have you from there?

Mr. LIBBY. I have a batchelor of science degree which I received in 1931, and a Ph. D. degree which I received in 1933.

BIOGRAPHICAL BACKGROUND OF COMMISSIONER MURRAY

Mr. RABAUT. We shall now be glad to hear from Commissioner Thomas E. Murray.

Mr. LIBBY. Mr. Murray, unfortunately, is out of town.

Mr. RABAUT. He is not here today?

Mr. LIBBY. No, sir.

Mr. RABAUT. Then, we will have him supply a statement as to his background and experience for the record.

(The statement referred to follows:)

THOMAS EDWARD MURRAY

Born: June 20, 1891, in Albany, N. Y. Son of Thomas Edward and Catherine (Bradley) Murray.

Received B. S. in mechanical engineering from Sheffield Scientific School, Yale University, 1911; LL.D., Fordham, Georgetown, and St. Johns Universities.

Prior to becoming a member of the Atomic Energy Commission was: Receiver, Interborough Rapid Transit, 1932–40; trustee United Mine Workers of America Welfare Fund; president, Metropolitan Engineering Co.; director, Murray Manufacturing Corp.; director and member, finance committee, Chrysler Corp.; trustee, Bank of New York and Fifth Avenue Bank. Trustee, Manhattanville College of New York City; engineer, New York State; director, American Radiator Corp.

Granted approximately 200 patents in electrical and welding field.

Fellow, American Society of Mechanical Engineers, American Institute of Electrical Engineers.

Roman Catholic, father of 11 children.

Member of the Atomic Energy Commission since March 31, 1950.

BIOGRAPHICAL BACKGROUND OF DR. VON NEUMANN

Mr. FIELDS. Dr. von Neumann is not here at the moment. However, I think he will be in later, but he can supply such a statement for the record, also, if you like.

Mr. RABAUT. Very well.

(The statement referred to follows:)

JOHN VON NEUMANN

Born in Budapest, Hungary, December 28, 1903. Son of Max and Margaret (Kann) von Neumann. Attended grammar and high school in Budapest, Hungary. Student at University of Berlin 1921–23; Federal Institute of Polytechnics, Zurich, Switzerland, 1923–25.

Ph. D. in mathematics, University of Budapest, 1925; M. S. in engineering and chemistry, Zurich, Switzerland, 1926; Honorary degrees, Princeton University, 1947; University of Pennsylvania and Harvard, 1949; Case Institute of Technology, University of Istanbul, 1952; University of Maryland, Columbia University, 1954; and Institute of Polytechnics, Munich, Germany, 1953.

Studied as a Rockfeller Fellow at Gottingen, Germany, 1926 and was instructor at the University of Berlin 1927–29, and the University of Hamburg 1929–30. Came to Princeton as a lecturer 1931 and returned to the University of Berlin on leave for 1 year, returning to the Institute for Advanced Study where he has been until his appointment to the United States Atomic Energy Commission. Naturalized 1937.

Author of Quantum Theory 1931, and coauthor of Theory of Games and Economic Behavior, 1943. Published more than 100 papers in mathematics, mathematical physics, and mathematical economics. Worked in the field of theoretical physics since 1926 and has worked since 1943 in this field with the staff of the Los Alamos Scientific Laboratory. Active in the development of theory and in the design and construction of computing machines.

Served on the General Advisory Committee to the United States Atomic Energy Commission from 1952 until appointment to Commission.

Since 1940 has served as consultant to various Army, Navy, OSRD, and AEC agencies. Received Medal for Merit and the Distinguished Civilian Service Award in 1946.

Appointed to the United States Atomic Energy Commission on October 23, 1954, for a term expiring June 30, 1959.

BIOGRAPHICAL BACKGROUND OF GENERAL MANAGER FIELDS

Mr. RABAUT. We shall be glad to hear from you, Mr. Fields, at this time. You are the General Manager of the Atomic Energy Commission, and suppose you tell us something about your background.

Mr. FIELDS. Yes, sir.

I have a chronology here which I set down briefly.

I was born on February 1, 1909, at Elkhart, Ind., and graduated from the Elkhart High School in 1926.

I was a student in civil engineering at the University of Illinois, from 1926 to 1929, when I entered West Point, the United States Military Academy, and graduated from there in 1933 with a degree of bachelor of science in engineering.

From then, until April 30, 1955, I was a Regular Army Officer of the Corps of Engineers, serving in various assignments, including troop duty and river and harbor duty with the Corps of Engineers.

At one point, from 1939 to 1942, I was Director of the United States Waterways Experiment Station at Vicksburg, Miss., on the Mississippi River flood-control project.

During the war, I was the commanding officer of an engineer-combat group in Europe.

I failed to mention that in 1937 I spent a year on postgraduate engineering work at Massachusetts Institute of Technology, and I spent the following year in the same sort of study at Harvard Graduate School of Engineering.

From both of these institutions I received a master of science degree in civil engineering.

Following the war, in November, 1945, I was assigned to the Manhattan project as an assistant to the commanding general of the Manhattan project. I was engaged in that work until February 1947, when I transferred to the Atomic Energy Commission, on detached assignment, and was an assistant in the Division of Military Application, which is concerned with the production, development, and programing of weapons.

I left the Commission for 2 years, and for 1 of those years I was an instructor at the National War College, from 1949 to 1950, and then I spent a year, 1950 to 1951 in Iran, on the United States military assistance program. I returned to the Commission in August of 1951, and was appointed the Director of the Division of Military Application, which is the same Division I had been in before.

I served in that capacity until May 1 of this year, when I was appointed General Manager of the Commission.

I have been General Manager since May 1.

Statement of General Manager

Mr. Rabaut. Mr. Fields, do you have a general statement which you would like to make?

Mr. Fields. Yes, sir.

Mr. Rabaut. We shall be glad to have a general statement from the General Manager at this time.

Mr. Fields. Mr. Chairman, I have two points which I would like to make before going into the budget, sir. One of them, Mr. Strauss has mentioned before, to the effect that the budget document before you contains the estimates of appropriations for operating expenses.

As the Chairman noted, the estimates for our plant and equipment appropriation have not been submitted by the President, because they are dependent upon congressional authorization of our 1956 program, which is now being considered by the Joint Committee on Atomic Energy. Therefore, we are prepared today to discuss with you only the operating expenses for the program.

One other point is that you will see in the document before you certain green pages, and certain white pages. The green pages contain classified material, and the white pages contain unclassified material. I think there will be occasions, as we go through the budget, when we will have to go off the record, because in discussing the green sheets, we will undoubtedly have to refer to classified matters.

Mr. Rabaut. That is our understanding.

Mr. Fields. Yes, sir.

Now, if you would turn to page 5, sir, I think I can give you the outline of our request.

63240—55——24

SUMMARY OF BUDGET ESTIMATE

You will note in the fiscal year 1956 column on the right-hand side that our estimate of obligations to be incurred is $1,525,523,000. If you will look down the column, you will see we plan to fund this requirement by reappropriation of $259,447,000 of unobligated balances under this appropriation at June 30 of this year, by the reimbursements which we estimate of $272,000 from other Government agencies, and by transfer of $220,804,000 from our plant and equipment appropriation, and a new appropriation in the amount of $1,045 million.

Now, the increase in obligations, as shown on the top line, is from $913,990,756 in fiscal year 1955 to $1,525,523,000 for fiscal year 1956.

Mr. RABAUT. Yes. I notice that grew from the 1954 sum of $889 million.

Mr. FIELDS. Yes. The increase from 1955 to 1956 is due, first, because we will procure substantially larger quantities of uranium concentrates, and, second, the plants which were built under the expansion program are coming into operation, and thus the production of fissionable materials and of weapons is expanding as these plants come into operation.

This increased production is being accomplished at lower unit prices than in fiscal year 1955.

So, the additional fund requirements are attributable to increased production, and not to increased price levels.

Mr. RABAUT. Off the record.

(Discussion off the record.)

Mr. FIELDS. There is one other point which I would like to make on page 5.

Mr. RABAUT. These programs will be broken up into small amounts in different places throughout the justifications?

Mr. FIELDS. Yes. We have these amounts by programs:

We have "Raw materials," which includes ores and concentrates as one program; you will see that as an entire program, and you will also see the fissionable materials program in the same fashion.

The overall increase, it will be noted, is caused by increases in uranium 235 costs, in plutonium costs, and in other material costs.

ESTIMATED EXPENDITURES

There is one other point I would like to note on page 5, in the first sentence of the last paragraph. You will note that our expenditures for operating expenses for fiscal year 1956 are estimated at $1,467,203,000.

We expect that to level off in 1960 at about $1.9 billion annually. This projection is not noted on that page, but that is our present estimate upon completion of our presently planned construction programs.

Mr. RABAUT. This is an increase of $367 million?

Mr. FIELDS. That is correct.

Mr. RABAUT. This is an increase of $367 million over the estimate of $1.1 billion plus for fiscal year 1955?

Mr. FIELDS. That is correct. It is an increase of somewhat less than $400 million over the expenditures in 1955.

Mr. RABAUT. You feel that total is going to continue to reflect an increase until it reaches an amount equal to $1.9 billion?

Mr. FIELDS. Until it levels off at $1.9 billion; yes, sir.

TRANSFER OF FUNDS FROM PLANT AND EQUIPMENT APPROPRIATION

Mr. RABAUT. On page 2, you have a transfer of $220,800,000.

Mr. FIELDS. That is the transfer we propose, as I mentioned before, from our plant and equipment appropriation, to be used as part of the funding arrangement for our total request.

Mr. RABAUT. That represents part of the plant and equipment money which was not used last year?

Mr. FIELDS. That is correct, sir.

Mr. RABAUT. You have the funds available for obligation now of $260.6 million for plant and equipment?

Mr. FIELDS. That is correct, and our plan there is to request that that amount would be appropriated for our plant and equipment when we get the authorization language.

Mr. RABAUT. You are holding that in abeyance for authorization language in a new bill which will come to us in the form of a supplemental?

Mr. FIELDS. Yes; that is right, sir.

Mr. RABAUT. Why should it not be transferred to "Operating expenses", and an equal amount asked for in an appropriation, when the supplemental comes forward?

Mr. FIELDS. When we prepared this, sir, we thought that both would be before you at the same time, and that was the reason for setting it up in this fashion.

Mr. RABAUT. Your reasoning is good. It is not general practice to do that, however; that is, to have the money ready ahead of time, for something which is going to come up for consideration at a later date.

Mr. FIELDS. Yes, sir.

Mr. RABAUT. Well, the committee will take it under advisement.

Mr. FIELDS. Could I invite your attention to page 8, sir, which I believe will show the fashion in which our budget is presented?

Mr. RABAUT. Before you do that, let us insert into the record pages 1 through 4 of the justifications.

(The pages referred to follow:)

GENERAL STATEMENT

FUNDS MADE AVAILABLE FOR THE ATOMIC ENERGY PROGRAM THROUGH FISCAL YEAR 1955

The activities of the Atomic Energy Commission are now funded under two appropriations, one for "Operating expenses" and one for "Plant and equipment." Up to and including the fiscal year 1955 a total of $14,368.4 million has been appropriated for the atomic energy program This amount includes funds expended by the War Department and other Federal agencies prior to the establishment of the Atomic Energy Commission. Of the total appropriated it is now estimated that $12,230.6 million will have been expended by June 30 1955, leaving an estimated unexpended balance on that date of $2,137.8 million. The breakdown of expenditures (on the basis of the Treasury combined statement) and the unexpended balance is as follows:

[In millions]

	Total	Operating expenses	Plant and equipment
Expenditures:			
War Department and other Federal agencies to Jan. 1, 1947	$2,233.4	$843.8	$1,389.6
Atomic Energy Commission:			
Fiscal year 1947 (half year)	158.1	136.1	22.0
Fiscal year 1948	465.6	270.6	195.0
Fiscal year 1949	620.8	294.8	326.0
Fiscal year 1950	550.2	308.5	241.7
Fiscal year 1951	896.7	416.1	480.6
Fiscal year 1952	1,669.9	565.5	1,104.4
Fiscal year 1953	1,790.9	706.9	1,084.0
Fiscal year 1954	1,895.0	783.5	1,111.5
Fiscal year 1955 (estimated)	1,950.0	1,100.4	849.6
Total expenditures	12,230.6	5,426.2	6,804.4
Estimated unexpended balance at June 30, 1955	2,137.8	840.5	1,297.3
Total appropriations	14,368.4	6,266.7	8,101.7

ESTIMATE OF FUNDS REQUIRED FOR THE FISCAL YEAR 1956 PROGRAM

In the fiscal year 1956 no appropriation will be required for plant and equipment as existing balances are sufficient to cover obligations for new projects to be initiated in the fiscal year 1956. The estimate for operating expenses provides for an appropriation in the fiscal year 1956 of $1,045 million which together with the reappropriation of unobligated balances of $259,447,000 and the transfer of $220,804,000 from plant and equipment would provide obligational authority of $1,525,251,000 for operating expenses for the fiscal year 1956. The following table is an analysis of funds available for obligation in fiscal year 1956.

[In millions]

	Total	Operating expenses	Plant and equipment
Estimated unexpended balance at June 30, 1955	$2,137.8	$840.5	$1,297.3
Less: Unpaid obligations at June 30, 1955	1,397.0	581.1	815.9
Unobligated balance available for 1956	740.8	259.4	481.4
Proposed transfer between appropriations	0	220.8	−220.8
Appropriation requested for fiscal year 1956	1,045.0	1,045.0	0
Funds available for obligation	1,785.8	1,525.2	260.6

It is now estimated that $260.6 million will be required for plant and equipment obligations. However, this is only a tentative estimate as legislation, required under section 261 of the Atomic Energy Act of 1954, authorizing appropriations for such purposes has not been enacted. The amounts shown in the foregoing table and the estimates of expenditures which follow are based on the program as covered in the draft of authorizing legislation submitted to the Congress on March 30, 1955, for consideration.

EXPENDITURES AND OBLIGATIONS FOR FISCAL YEAR 1956

It is now estimated that expenditures for the fiscal year 1956 will total $2,000 million which is $50 million higher than the estimate of $1,950 million for the fiscal year 1955. While expenditures for plant and equipment are expected to decrease as the major expansion programs initiated in 1951, 1952, and 1953 are completed, expenditures for operating expenses will increase as additional plants come into production. The following is an analysis of estimated obligations and expenditures for the fiscal year 1956:

[In millions]

	Total	Operating expenses	Plant and equipment
Estimated net obligations, fiscal year 1956	$1,785.8	$1,525.2	$260.6
Estimated unpaid obligations at June 30, 1955	1,397.0	581.1	815.9
Total	3,182.8	2,106.3	1,076.5
Less: Estimated expenditures, fiscal year 1956	2,000.0	1,467.2	532.8
Estimated unpaid obligations at June 30, 1956 (unexpended balance)	1,182.8	639.1	543.7

The following table shows the detailed reconciliation of obligations to expenditures.

Obligational authority related to obligations and expenditures (excluding trust accounts)

	1955 estimate	1956 estimate
General and special accounts (excluding working funds):		
Current appropriations:		
Presently available	$1,209,844,700	$1,045,000,000
Contract authorization	0	0
Unobligated balances available	443,227,061	740,801,000
Reimbursements from other Government agencies	853,000	377,000
Reimbursements from non-Federal sources	970,000	470,000
Total available	1,654,894,761	1,786,648,000
Less:		
Transfers to other Government agencies	0	0
Advances to allocated working funds with other agencies	24,245,275	31,183,688
Cash required to liquidate prior year contract authorization	0	0
Total available for obligations	1,630,649,486	1,755,464,312
Less unobligated balances at end of year:		
To be carried forward in continuing accounts	740,801,000	0
To lapse upon closing of accounts	0	0
Total obligations incurred	889,848,486	1,755,464,312
Less collections treated as reductions from expenditures	1,823,000	847,000
Net obligations for the year	888,025,486	1,754,617,312
Obligations outstanding at start of year	2,363,468,291	1,338,232,097
Net obligations to be accounted for	3,251,493,777	3,092,849,409
Less obligations outstanding at end of year	1,338,232,097	1,148,962,574
Net expenditures general and special accounts (excluding working funds)	1,913,261,680	1,943,886,835
Working fund advances to other agencies:		
Unobligated balances available	35,428,133	0
Advances from AEC appropriation	24,245,275	31,183,688
Net obligations for the year	59,673,408	31,183,688
Obligations outstanding at start of year	35,878,572	58,813,660
Net obligations to be accounted for	95,551,980	89,997,348
Less obligations outstanding at end of year	58,813,660	33,884,183
Net expenditures, working funds	36,738,320	56,113,165
Net expenditures, general and special accounts, including working funds	1,950,000,000	2,000,000,000

COMPARISON OF OPERATING COSTS

Mr. FIELDS. On page 8 is the comparative summary of the accrued operating costs by program and reconciled to obligations.

At this point, I should call your attention to the fact that our budget is presented primarily in terms of cost for each program. We have been doing this since 1952. A cost budget has the following advantages: It permits the use of accrual accounting, as used by our

industrial contractors; it permits budgeting to be consistent with accounting; and it permits meaningful estimates, and control of funds in accordance with program purposes. In each of the first eight programs are the costs which we estimate will be accrued during fiscal year 1956 under those various programs.

Now, by means of adjustments later for inventories, working capital, and other adjustments, unliquidated obligations, and reimbursable obligations, it is reconciled to the total obligations.

Mr. RABAUT. Yes. It comes to the figure of $1,525,523,000?

Mr. FIELDS. Yes, sir.

Mr. RABAUT. I note here that in the estimates for "Sources and fissionable material" there has been a jump from 1954 to 1955 from $417 million plus, to $674 million plus, and now you have an increase to $947 million plus.

Mr. FIELDS. Yes, sir. That is an additional increase, sir.

Mr. RABAUT. The $947 million is an increase of what?

Mr. FIELDS. That is an increase of $273 million over the 1955 estimated cost.

Mr. RABAUT. I see.

That represents about a 40-percent increase.

Mr. FIELDS. That is correct, sir.

Mr. RABAUT. What is that increase based upon?

Mr. FIELDS. That is predicated on the increased procurement of ores, and on the increased production of fissionable materials.

Mr. RABAUT. That is, as you explained this morning?

Mr. FIELDS. Yes; and those will be broken down in detail in each program. These two programs have been combined for the unclassified sections, because by separating them you would be able to see how much cost went into each program and, for security reasons, we thought they should be combined.

Mr. RABAUT. In other words, we might say "as explained this morning."

Mr. FIELDS. Yes, sir.

Mr. RABAUT. You have the same situation in regard to the total for weapons.

Mr. FIELDS. Yes, sir; there is an increase in the weapons program.

Mr. RABAUT. There is a 30-percent increase, and the next one represents a 33-percent increase?

Mr. FIELDS. Yes, sir; for reactor development.

Mr. RABAUT. Do you feel that you are going to need this money for that purpose this year?

Mr. FIELDS. Yes, sir; and I would hope that in going through the programs, we could convince you of that, sir.

Mr. RABAUT. In regard to your security investigations program, I note the request has dropped about 40 percent.

Mr. FIELDS. Yes, sir.

Mr. RABAUT. Why has that taken place? We are glad to see it, but we want to know something about it. Are you letting down your guard?

Mr. FIELDS. No, sir; that is largely because of provisions of the new act which provide for a determination on the categories of clearances that are required in each instance, which removes from the Commission the necessity to clear members of the Department of Defense, in all instances, for access to information.

So, we will have different categories of clearances, one of which is limited access. This type of clearance is used for information classified no higher than confidential, and requires only a file check and a fingerprint check, primarily, with further investigation only if derogatory information is revealed.

Mr. RABAUT. In other words, some of this investigating will be done by others before they have any right to get in touch with you; is that right?

Mr. FIELDS. In the case of the Department of Defense; yes, sir; but any clearances required other than that are determined by the Commission on the basis of investigations by the Civil Service Commission or the Federal Bureau of Investigation.

DECREASE IN REIMBURSEMENTS

Mr. RABAUT. On page 5 of your justifications, there is a sharp drop in reimbursements from other Government agencies, from $498,000 down to $272,000. Please explain that.

Off the record.

(Discussion off the record.)

Mr. FIELDS. This is not for production.

The largest item of reimbursement is for utilities which we provide for an ordnance works in Indiana. Could you give the specifics on this decrease in 1956, Mr. McCarthy?

Mr. MCCARTHY. The big drop, Mr. Chairman, is due to the fact that in 1954 and 1955 we furnished at Hanford certain utilities and services to the Army units stationed near our Hanford plant. In 1956, they will take over themselves, and procure their own electricity.

In other words, they will not be buying utility services from us. For that reason, that reimbursement will not be made in 1956.

That is the reason for the big drop.

Mr. RABAUT. That goes into the Army budget, then?

Mr. MCCARTHY. That is correct, sir. They have in the past budgeted for it initially, and reimbursed us.

Mr. RABAUT. But, you know it is about the same price now as it was when you were supplying it?

Mr. MCCARTHY. Yes, sir.

Mr. RABAUT. You may proceed, Mr. Fields.

Mr. FIELDS. All right, sir.

OPERATING COST TRENDS

If I could come back to page 8, again, could I show you a chart at this point which, in effect, presents page 8 on a chart from, showing the operating costs for the past fiscal year, and up through 1956? The chart emphasizes that the source and fissionable materials program, and the weapons programs are by far the largest programs in our activities. The total cost is slightly under $1.5 billion for 1956 and, as you recall, Mr. Strauss indicated 83 percent was in the source and fissionable materials and weapons programs. The amount of $1.2 billion is for those programs in fiscal 1956.

Mr. RABAUT. I want to call the attention of the committee to the fact that this chart uses the term "billions" as a measurement of the dollars involved. You will note that it says at the top "Billions of dollars."

PLANTS OPERATED BY THE AEC

Mr. FIELDS. With further reference to the source and fissionable materials program, and weapons, I have two charts, and this particular chart is for the purpose of showing that what we operate is a large, industrial complex.

You start with the procurement of raw materials, either foreign or domestic; through assay and preparation of ore; refining plants for the ore; and the processing of materials. The second step is the preparation of feed materials, which means either the production of uranium metal, its conversion into rods, and preparation into slugs, or the preparation of uranium hexafluoride. This is a large-complex operation.

The third step is the actual manufacture of fissionable material. On one path, uranium slugs move to Hanford or Savannah River, where some of the uranium is transmuted in reactors to plutonium. Following the other path, uranium hexafluoride passes through the gaseous diffusion plants at Paducah, Oak Ridge, and Portsmouth to become enriched in the isotope uranium 235.

These two products, plutonium and uranium 235, flow through a fourth step, which is the preparation of reactor fuels, or of weapon parts. The fourth step includes large chemical separation plants, and plants for converting the materials to metal. The materials are then either utilized for weapons, which are placed in stockpile, or for the peaceful uses shown on the chart, namely, science, agriculture, industry, and medicine.

Looking at this in a slightly different way, here is a chart showing a sequence of ore to bombs. On the left, the flags indicate the various countries from which ore originates. That material flows through feed material plants, such as at St. Louis, or Fernald, then through reactors for production of plutonium at Hanford or Savannah River, or through gaseous diffusion plants at Oak Ridge, Paducah, and Portsmouth, and nuclear material flows through fabricating plants for nuclear components, and then into the stockpile.

INVESTMENT IN PRODUCTION PLANTS

You will notice, indicated in the lower figures, the total dollar investment in our facilities for manufacturing purposes: Two-tenths of $1 billion in feed materials; $4.8 billion in the reactors and the gaseous diffusion plants, and about four-tenths of $1 billion in plants which fabricate these components into weapons, or a total of something like $5.4 billion of investment in manufacturing facilities.

I thought that would be of some interest in order to show the size of this project.

Mr. RABAUT. It is very good. Would you put that other chart up there again?

Off the record.

(Discussion off the record.)

Mr. RABAUT. We will go back on the record now.

SUMMARY DATA ON OPERATING EXPENSES

Pages 5 to 12 of the justifications will be inserted in the record at this point.

(The justifications referred to follow:)

Appropriation for Operating Expenses

APPROPRIATION REQUEST, FISCAL YEAR 1956

The appropriation requested for operating expenses for the fiscal year 1956 is $1,045 million which is $53,962,300 less than the $1,098,962,300 appropriated for the fiscal year 1955.

ESTIMATED OBLIGATIONS, FISCAL YEAR 1956

The appropriation of $1,045 million together with the reappropriation of unobligated balances at June 30, 1955, the transfer of funds from plant and equipment and reimbursements will provide a total of $1,525,523,000 for obligation in the fiscal year 1956. The following table sets forth the reconciliation of obligations to appropriations for the fiscal years 1954, 1955, and 1956.

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
Obligations	$889, 259, 364	$913, 990, 756	$1, 525, 523, 000
Less:			
Prior year balance reappropriated	75, 779, 373	73, 977, 456	259, 447, 000
Reimbursements from other Government agencies	468, 447	498, 000	272, 000
Comparative transfer from Department of the Navy	1, 300, 000	0	0
Transfer from "Plant and equipment, AEC"	0	0	220, 804, 000
Plus:			
Unobligated balance at end of year	73, 977, 456	259, 447, 000	0
Transfer to Department of the Navy	5, 298, 000	0	0
Comparative transfer to Department of the Army	794, 000	0	0
Appropriation	891, 781, 000	1, 098, 962, 300	1, 045, 000, 000

ESTIMATED EXPENDITURES, FISCAL YEAR 1956

Expenditures for operating expenses for the fiscal year 1956 are estimated at $1,467,203,000 which is an increase of $366,833,842 over the estimate of $1,100,-369,158 for the fiscal year 1955. The table on the following page shows in detail the reconciliation of obligational authority to obligations and expenditures for the fiscal years 1955 and 1956.

Obligational authority related to obligations and expenditures (excluding trust accounts)

	1955 estimate	1956 estimate
General and special accounts (excluding working funds):		
Current appropriations:		
Presently available	$1,098,962,300	$1,045,000,000
Transfer from "Plant and equipment, AEC"	0	220,804,000
Contract authorization	0	
Unobligated balances available	61,770,864	259,447,000
Reimbursements from other Government agencies	498,000	272,000
Reimbursements from non-Federal sources	0	
Total available	1,161,231,164	1,525,523,000
Less:		
Transfers to other Government agencies	0	
Advances to allocated working funds with other agencies	12,830,890	25,498,530
Cash required to liquidate prior year contract authorization	0	
Total available for obligations	1,148,400,274	1,500,024,470
Less unobligated balances at end of year:		
To be carried forward in continuing accounts	259,447,000	
To lapse upon closing of accounts	0	
Total obligations incurred	888,953,274	1,500,024,470
Less collections treated as reductions from expenditures	498,000	272,000
Net obligations for the year	888,455,274	1,499,752,470
Obligations outstanding at start of year	744,154,359	565,806,573
Net obligations to be accounted for	1,632,609,633	2,065,559,043
Less obligations outstanding at end of year	565,806,573	625,606,500
Net expenditures general and special accounts (excluding working funds)	1,066,803,060	1,439,952,535
Working fund advances to other agencies:		
Unobligated balances available	12,206,592	0
Advances from AEC appropriation	12,830,890	25,498,530
Net obligations for the year	25,037,482	25,498,530
Obligations outstanding at start of year	23,794,690	15,266,074
Net obligations to be accounted for	48,832,172	40,764,612
Less obligations outstanding at end of year	15,266,074	13,514,147
Net expenditures, working funds	33,566,098	27,250,465
Net expenditures, general and special accounts, including working funds	1,100,369,158	1,467,203,000

RECONCILIATION OF COSTS TO OBLIGATIONS

The estimates for "Operating expenses" of the Commission are stated in terms of accrued costs for each program with total costs reconciled to obligations by a showing of changes in unapplied resources. The accrued costs shown for each program denote the actual usage of labor, materials and services during the fiscal year and therefore reflect more accurately the level of effort in each program, as compared to budget estimates based on obligations incurred during the period. The accrued costs do not include amounts for depreciation of facilities used in the operation. The Commission does, however, maintain accounts for depreciation for the purpose of determining total costs of production and for use in establishing the prices for services rendered or products sold to others.

The table on the following page shows a comparison of accrued costs by program for the fiscal years 1954, 1955, and 1956 and a reconciliation of costs to obligations for each of these years.

Comparative summary of accrued operating costs by program reconciled to obligations

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
Operating costs:			
Source and fissionable materials	$417,599,302	$674,919,000	$947,458,000
Weapons	218,119,230	226,386,000	271,148,000
Reactor development	87,603,074	101,095,000	134,582,000
Physical research	38,612,424	40,253,000	45,720,000
Biology and medicine	24,936,611	27,000,000	27,000,000
Community	−1,249,802	−2,098,000	−2,217,000
Program direction and administration	33,455,211	33,353,000	33,210,000
Security investigations	12,592,903	9,580,000	5,720,000
Total operating costs	831,668,953	1,110,488,000	1,462,621,000
Adjustment of prior year costs	3,604,403	−4,418,000	0
Increase (+) or decrease (−) in:			
Inventories	−4,243,370	12,080,000	14,467,000
Working capital and other adjustments	−47,035,443	−17,780,842	−9,885,000
Unliquidated obligations	104,796,374	−186,876,402	58,048,000
Subtotal	888,790,917	913,492,756	1,525,251,000
Reimbursable obligations	468,447	498,000	272,000
Total obligations for operating expenses	889,259,364	913,990,756	1,525,523,000

HIGHLIGHTS OF OPERATING PROGRAMS

As shown on the preceding table, operating activities carried on by the Commission are grouped in terms of 5 major programs and 3 subsidiary or supporting programs. There follows a brief analysis of the estimated costs to be incurred for each of these operating programs.

Operating costs

1. *Source and fissionable materials program.*—The operating costs for the source and fissionable materials program are estimated at $947.5 million in 1956, compared with estimated 1955 costs of $674.9 million and actual 1954 costs of $417.6 million. The production of source and fissionable materials begins with the exploration for and procurement of uranium ore and concentrates, which are refined into feed materials for gaseous diffusion plants or reactors. The fissionable isotope uranium 235 is extracted in gaseous diffusion plants at Oak Ridge, Tenn., Paducah, Ky., and Portsmouth, Ohio. Plutonium is synthesized in the reactors at Hanford, Wash., and Savannah River, S. C. The amounts of these fissionable materials produced are the limiting factor in the production of atomic weapons.

The substantially increased quantities of uranium concentrates to be procured in 1956 will include materials from such foreign sources as South Africa, Australia, Belgian Congo, and Canada. Domestic production of uranium concentrates in the Western States will continue to increase, as well as the recovery of byproduct uranium being undertaken by the domestic phosphate industry.

As new facilities come into operation for the production of feed and fissionable materials, sharply increased output will be accompanied by lower unit processing costs. Development of new equipment and processes for each manufacturing step is aimed at still further increases in yield and improvements in the quality of products.

2. *Weapons program.*—Operating costs for the weapons program are estimated at $271.1 million in 1956, compared with estimated 1955 costs of $226.4 million, and actual 1954 costs of $218.1 million. The weapons program includes the production of atomic weapons, the development, design, and testing of new weapon types, and the maintenance of stockpiled weapons in a state of constant readiness. Weapon testing will continue at the test sites in Nevada and the Pacific islands, as developments may warrant.

3. *Reactor development program.*—Operating costs for the reactor development program are estimated at $134.6 million in 1956 compared to estimated 1955 costs of $101.1 million and actual 1954 costs of $87.6 million.

Increased emphasis is being placed on advancing power-reactor technology, in order to assist industry ultimately to achieve large-scale generation of economic electrical energy from atomic reactors. The rate of progress toward this objective will be accelerated in 1956.

Research and development will be conducted on an increasing scale in 1956 on reactors to propel naval vessels and military aircraft and to meet military needs for

heat and power in remote areas. This research also provides information useful in the development of civilian-power reactors.

Work on specific reactor designs constitutes about 87 percent of the scientific and technical effort in the reactor-development program. The remainder covers advanced engineering and development, applicable to many reactor designs, on reactor materials and components, systems for heat transfer, shielding, and chemical processing: operation of the experimental facilities at the National Reactor Testing Station in Idaho; and conduct of schools of reactor technology for scientific and engineering personnel in both Government and industry and from foreign countries.

4. *Physical research program.*—Operating costs for physical research are estimated at $45.7 million in 1956 compared with estimated 1955 costs of $40.3 million and actual 1954 costs of $38.6 million. The physical-research program consists of theoretical and experimental investigations required to support both the Commission's immediate and longer-range objectives for utilizing nuclear energy. Every advance achieved in the past can be traced back to similar laboratory investigations. In the atomic-energy program research plays a relatively more important role than in other industrial operations of comparable size. The phemomena dealt with are close to the frontiers of science. Unusual materials are employed, and their nuclear as well as their chemical and physical properties must be determined. The temperatures and radiation densities at which these materials are used are outside the range of previous experience in industrial technology.

Research is carried on both by Commission laboratories and by some 100 universities and other independent institutes. In support of research activities, the program provides several services including the distribution of radioisotopes, stable isotopes, and other controlled materials: and pile irradiations.

5. *Biology and medicine program.*—Operating costs for biology and medicine are estimated at $27 million for 1956, compared with estimated costs of $27 million in 1955 and actual costs of $24.9 million in 1954. Primary program emphasis will continue to be placed on the protection of the health and safety of atomic energy plant workers and the general populace from the hazards of atomic-energy operations. Program direction will be influenced by factors developed in increased production activities and the trend toward power applications. Technical guidance and standards will continue to be furnished for the safety and health aspects of production and weapon test activities. Close liaison will continue to be maintained with the Federal Civil Defense Administration as well as with other agencies performing functions interrelated with Commission biomedical interests.

6. *Community operations.*—The Commission operates under contract the communities of Los Alamos, N. Mex., Oak Ridge, Tenn., and Richland, Wash., and provides limited housing services at Sandia, N. Mex., and in the uranium mining area. Despite continuing population increases the estimates for fiscal year 1956 and fiscal year 1955 and the actual for fiscal year 1954 reflect revenue in excess of operating costs. The net revenue for fiscal year 1956 is estimated to be $2.2 million compared with $2.1 million estimated for fiscal year 1955 and the actual fiscal year 1954 net revenue of $1.2 million.

7. *Program direction and administration.*—Under the general heading of program direction and administration are grouped together the salary costs and other expenses of Commission personnel engaged in general management, executive direction, and technical supervision of program operations; the negotiation and administration of contracts; and other related administrative activities. The corresponding costs for Commission personnel engaged in nonadministrative activities directly related to a specific program are included in that program, as for example, personnel safeguarding fissionable material shipments or providing fire protection for a community. Expenses of personnel and travel of other Government agencies doing work for the Commission under working fund advances are treated as contractual services, are not included in the AEC detail of personal services and travel, and are not included in limitation amounts.

The Commission administers its widely scattered operations through the Washington headquarters office, 10 operations offices and 15 area offices. Estimated costs of $33.2 million will be incurred in 1956 for program direction and administration, compared with estimated 1955 costs of $33.4 million and actual 1954 costs of $33.5 million. These costs in 1956 would represent 2.3 percent of total operating costs, compared with an estimated 3.8 percent in 1955 and 4.0 percent in 1954.

8. *Security investigations.*—Estimated costs of security investigations in 1956 are $5.7 million, compared with estimated 1955 costs of $9.6 million and actual

1954 costs of $12.6 million. Under provisions of the Atomic Energy Act persons to be employed on work involving access to restricted data are required to be cleared for security purposes based on investigations by the Civil Service Commission or the Federal Bureau of Investigation.

9. In addition to the operating costs, obligational requirements are affected by changes in unapplied resources as follows:

(a) Inventories: In fiscal year 1956 an increase in inventories of $14.5 million will be required to support new facilities coming into operation. This compares with an increase of $12.1 million in 1955 and a decrease of $4.2 million in 1954. The total value of inventories as of June 30, 1956, is estimated at $115.1 million.

(b) Working capital: It is estimated that the net balance of assets less liabilities, other than inventories, will decrease by $9.9 million during the fiscal year 1956. This reduction compares with an estimated decrease of $17.8 million in 1955 and an actual decrease of $47 million in 1954. It is estimated that by June 30, 1956, liabilities will exceed assets by $61 million.

(c) Unliquidated obligations: The estimates provide for an increase during 1956 in the level of outstanding contracts, orders, etc. of $58 million. This compares to an estimated decrease of $186.9 million in 1955 and an actual increase in 1954 of $104.8 million. The net decrease in 1955 is the result of a change in policy with regard to the method of financing contracts for the operation of Commission-owned facilities. The level of outstanding obligations at June 30, 1956 is estimated at $639.1 million.

Mr. RABAUT. Mr. Fields, will you please proceed.

SOURCE AND FISSIONABLE MATERIALS PROGRAM

Mr. FIELDS. Mr. Chairman, I would suggest that we turn to page 21. Pages 13, 14, and 15 relate to proposed language changes which I would recommend we come back to after we have gone through the details of the budget.

If you would turn to page 21, I would recommend that pages 21 and 22 now be inserted in the record.

Mr. RABAUT. They will be inserted in the record at this point.

(The information referred to follows:)

SOURCE AND FISSIONABLE MATERIALS PROGRAM—OPERATING COSTS

Program statement

Estimate, fiscal year 1956	$947,458,000
Estimate, fiscal year 1955	674,919,000
Increase	272,539,000

Summary of estimates by category

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
1. Procurement and production	$380,707,534	$636,527,000	$910,678,000
2. Process development	36,891,768	38,392,000	36,780,000
Total source and fissionable materials program	417,599,302	674,919,000	947,458,000

JUSTIFICATION OF CATEGORIES

1. Procurement and production, $910,678,000

These funds will provide for (1) the obtaining of uranium ore and ore concentrates from foreign and domestic sources to meet the requirements for fissionable materials for weapons production, the development of reactors and for research purposes; (2) the refining and conversion of uranium ores and concentrates to the forms used as a feed for the reactors and gaseous diffusion plants; (3) the operation of production facilities at Oak Ridge, Tenn., Paducah, Ky., Portsmouth, Ohio, Fernald, Ohio, St. Louis, Mo., Hanford, Wash., and Savannah River, S. C.; and

(4) the production of certain other strategic materials which are required in connection with the atomic energy program The increase in this category can be attributed to the following factors: (1) Increased procurement of uranium; (2) increased metal and feed requirements; and (3) operation of new and established facilities to produce increased quantities of fissionable materials and special products.

2. Process development, $36,780,000

These funds will provide for (1) the development of methods to increase the production capacity of feed plants; (2) the undertaking of special studies of a general nature which are required in the atomic energy program, including studies relative to the separation of isotopes other than uranium; and (3) process developments to improve the efficiency and economy of the fissionable materials and special products production operations. This development program is the principal means by which the unit costs of fissionable materials have been reduced in the past Continued effort in the future should continue to yield returns greatly in excess of program costs. The decreased cost in fiscal year 1956 is the result of deemphasis on certain development studies and shifts to others resulting in less man-hours than were formerly required.

Mr. FIELDS. This estimate covers the source and fissionable materials program, the operating cost therefor, in the amount of $947,458,000 which is an increase over fiscal year 1955 of $272,539,000. These are actually two programs which are combined here in this unclassified statement for security reasons. They provide the broad base of the weapons program and programs for the development of power from atomic energy. It has been the fundamental policy of the Commission to maximize the procurement of ores and the production of fissionable materials consistent with economy and efficiency. To this end, we have developed new sources of ore at home and abroad, and have increased the capacity of fissionable production plants by process improvements and by expansion. The increase in amount is due entirely to greater quantities at lower costs.

If you would turn to page——

Mr. RABAUT. Before you leave page 21, do you feel today that your 1955 estimate of $675 million will turn out to be your actual requirement?

Mr. FIELDS. I think it will come very close to being our actual requirement, sir. At this stage, we may underrun it slightly but as far as we can see it is a close approximation as to what our estimated costs will be.

Mr. RABAUT. Last year you indicated an intention to spend $740 million. You now estimate you will spend almost $675 million.

Mr. FIELDS. We may miss it as much as $10 million or $20 million.

Mr. MCCARTHY. The change in the 1955 estimate as projected, as Mr. Fields mentioned, was the result of a change in program stemming from the weapons test. We are well along in the year now.

PROSPECTING FOR URANIUM

Mr. RABAUT. Would you care to discuss briefly what help the numerous amateur uranium seekers are giving you?

Mr. FIELDS. I puzzle over the word "amateur" in attempting to answer that.

Mr. RABAUT. I mean the new ones. I do not necessarily mean that they are all amateurs.

Mr. FIELDS. We have an increased activity in the search for uranium, and it has paid off. Perhaps I could ask Mr. Johnson, who is the Director of our Raw Materials Division, to answer that.

Mr. JOHNSON. The public interest in uranium prospecting has reatly increased, and, in part, the increase in available ore has been ue to some few very rich strikes by people with very little previous xperience certainly in uranium prospecting, and, in one case, with o experience in prospecting of any kind.

Among all of the prospectors in the uranium business today, I resume it might be said that, if not amateurs, their experience has een very recent, and yet they have been responsible, to a very large xtent, for the extension of our uranium operations far beyond the riginal Colorado Plateau area which was the only producer of the ative uranium ores in the past.

The first discovery in New Mexico, where we now have the largest eposit in the United States, was made by a Navaho Indian who was ttracted by the yellow color of a rock and heard about uranium and ook it into a local merchant. That led to the development of the rst operation in New Mexico.

The discoveries in Texas recently, in the State of Washington, in yoming and in the Dakotas have been made by people probably aving some previous experience in prospecting in some cases. But, r the most part they are people who have become interested in ranium after our program began about 7 years ago.

Mr. RABAUT. What do you have to insert after page 21?

Mr. FIELDS. Pages 21 and 22 are unclassified versions of information overed on the following classified pages, which would be taken up in etail.

Mr. RABAUT. Mr. Fields, please proceed.

RAW MATERIALS PROGRAM

Mr. FIELDS. If you will turn your attention now to page 23, sir, at is classified but I do have an unclassified statement which I could sert in the record, or I could proceed right now with the raw materials ogram.

Mr. RABAUT. Tell us something about the raw materials program.

Mr. FIELDS. The progress which has been made in increasing the ation's uranium supply is noteworthy.

The procurement picture continues to improve year by year. evertheless, there is still a need for even greater quantities of anium. From the beginning of the atomic energy program through 53, the Shinkolobwe mine in the Belgian Congo was the principal urce of the uranium supply. This situation is now changed as a sult of the aggressive measures which have been taken to develop her sources, with special emphasis concentrated on developing our n domestic resources.

Along with the rapid growth of uranium production in this country, oduction will also be increased in Canada. The most promising w field discovered in Canada lies in the Blind River area where ere are large tonnages of uranium which, while of relatively low ade, can be economically mined and treated on a large scale.

Exploration activity in Canada continues at a high rate. These tivities should result in the continued discovery of new uranium posits and possibly new uranium-bearing ores. Discoveries al-ady made give assurance that Canada will be a major uranium oducer for many years. The combination of domestic and Cana-

dian uranium production would have special significance in the event of an emergency which might restrict us to supplies available on the North American Continent. However, a significant portion of our uranium supply will continue to come from overseas sources.

The Belgian Congo will continue to be an important source with a continuation of the present level of production anticipated.

In South Africa, production continues to increase at a rapid rate as more and more of the total of 15 plants authorized come into production. At the end of 1955 approximately 12 plants will be in operation and the remainder will be completed in fiscal year 1956.

This may be compared with the situation at the end of fiscal year 1954, when only 6 were in operation. Some of the newer plants will not reach full production status until fiscal 1957. In addition to these major sources of supply, we are also counting on lesser amounts of shipments from Australia and Portugal.

The foregoing is reflected in our 1956 budget, being rather substantial increase over the 1955 level in both tonnages and total cost.

Now we go to the classified section of raw materials. That is on page 23. At this point, I should like to go off the record.

FRIDAY, MAY 27, 1955.

FUNDS REQUIRED FOR 1956 PROGRAM

Mr. RABAUT. The subcommittee will come to order.

We will turn back, and take up with General Fields, the General Manager of the Atomic Energy Commission, this item on page 2 of funds required for the 1956 program.

We talked about this matter yesterday, and I thought it was on the record. However, only part of the discussion is on the record, and I think for the benefit of the record we might talk about it this morning.

There is an unobligated balance there of $481.4 million for plant and equipment. This is under funds required for the 1956 program. It sets forth an unobligated balance available for 1956 in the sum of $481.4 million for plant and equipment.

In the succeeding line there is a proposed transfer between appropriations of $220.8 million. This is a transfer from money which was not expended?

Mr. FIELDS. That is correct.

Mr. RABAUT. In other words, the unobligated balance of $481.4 million is money which has been retained because of not proceeding with all of the obligations which were scheduled to take place when the money was obtained?

Mr. FIELDS. Plus some savings from the estimates, the original estimates.

Mr. RABAUT. The proposal now is to transfer $220.8 million out of that fund?

Mr. FIELDS. To apply against our request.

Mr. RABAUT. To apply against your request for operating expenses.

Mr. FIELDS. Yes, sir. That is for 1956.

Mr. RABAUT. Further down here, you have funds available for obligation for plant and equipment in the sum of $260.6 million, is that correct?

Mr. FIELDS. That is correct, sir. When we prepared this budget we prepared the operating budget and the plant and equipment budget concurrently. As you know, our plant and equipment budget must await the authorization by the Congress.

Mr. RABAUT. There will be a new request but it has not come through as yet, though you have the money.

Mr. FIELDS. In the preparation of this budget, we were requesting that the $260 million be left for the plant and equipment request which we are coming forward with.

Mr. RABAUT. In other words, this money is available though the legislative committee has not had time to act.

Mr. FIELDS. It is there. It is an unobligated balance, but our intention was that it would be applied against our new requests which will be here shortly.

Mr. RABAUT. I understand, but it is an odd procedure. You have the money before you really have the legislative bill passed, for it is really not released at this time by the legislative committee. So naturally it is not before the Appropriations Committee, but the money is before the Appropriations Committee, with a request that we consider it for this purpose.

Mr. FIELDS. Yes, sir.

Mr. RABAUT. It is a carryover in your funds.

Mr. FIELDS. Yes, sir, to carry over our funds, which we request we retain to apply against the plant and equipment request when it comes in to this committee.

Mr. RABAUT. The committee will take this matter up when we go into executive session. I just brought it up at this time so we would have it on the record. We discussed it yesterday at some length, but only a small portion of the discussion was on the record.

EXPANSION UNDER SUPPLEMENTAL APPROPRIATION ACT OF 1953

In connection with the expanded program under the Supplemental Appropriation Act of 1953, you received $2,898,800,000 for plant and equipment, and the House took a strong position that this was too much. You have stated earlier that your surplus funds of $481 million this year arise primarily from the 1953 program. The committee reduced the sum for contingencies by $122 million last year, after the budget had already taken large amounts.

How much of the $2,898,800,000 will not be required for that program now that the construction is almost complete?

Mr. MCCARTHY. Going back to our total construction program, Mr. Chairman, including the 1953 expansion appropriation——

Mr. RABAUT. Under these funds?

Mr. MCCARTHY. Under the total funds appropriated to us under plant and equipment, we had given up through last year a total, as I recall, of some $200 million or $300 million.

Mr. RABAUT. That is a lot of money, two or three hundred million dollars—which is it?

Mr. MCCARTHY. I have not checked these figures. I thought I had a table here showing the totals. I have it by individual items, and I might run down through them.

For instance, for the Oak Ridge expansion there was an original estimate, for which funds were appropriated, of $461 million. The esti-

mate which we presently reflect in this budget is $260 million. In other words, we have completed that plant at a savings of roughly $200 million.

Again, at Paducah we estimated that particular plant at $470 million; and this was completed or will be completed at an estimated cost of $445 million, for a saving there of some $25 million.

Mr. RABAUT. How many of those have you there?

Mr. MCCARTHY. We have all of these items.

Mr. RABAUT. How many in number?

Mr. MCCARTHY. There were about nine items in the expansion program, and some items which came up after that. I have a recapitulation here now.

Mr. RABAUT. How much does it show in total?

Mr. MCCARTHY. It shows here that the original estimate for all of these projects amounted to $4,941 million. Our present estimate is that we will complete those jobs for $3,970 million.

Mr. RABAUT. That is almost a billion dollars.

Mr. MCCARTHY. Funds were declared surplus in both our 1954 and 1955 appropriations; and the $481 million which you see here being carried over from 1955 to 1956 is the balance of those savings.

Mr. RABAUT. The balance of this $1 billion?

Mr. MCCARTHY. Yes, sir.

Mr. RABAUT. What happened to the difference between this amount which is set forth here, and the $1 billion?

Mr. MCCARTHY. They were declared as surplus in both the 1954 and the 1955 appropriations acts, and credit taken for them in the 1954 and 1955 appropriations acts against our new requirements.

Mr. RABAUT. Were they returned or were they kept within the confines of the Commission?

Mr. MCCARTHY. The plant and equipment appropriations are available until expended, and we took credit for them against new programs in both 1954 and 1955 in coming up with our new projects for each of the fiscal years. We came out with a program in 1955, as I recall our 1955 request to the committee, amounting to four hundred-odd-million dollars, of which we took credit for $290 million, resulting in a new appropriation for 1955 of $110 million.

Mr. RABAUT. These figures to which you are referring now were all submitted in your justifications before the Appropriations Committee in the past 2 years?

Mr. MCCARTHY. The 1954 and 1955 appropriations.

Mr. RABAUT. Do you go back at all to the legislative committee on these matters?

Mr. MCCARTHY. On the reductions in cost, you mean?

Mr. RABAUT. For reappropriation of funds or for reuse of funds.

Mr. MCCARTHY. No, sir. Not for reappropriation although we do need authorization for projects we will undertake from these funds.

Mr. RABAUT. Once you have obtained them, the only people who review these balances and their reappropriation is our committee?

Mr. MCCARTHY. That is right. The language, of course, in the operating expense appropriation has a proposed provision in it which would transfer this $220 million to the operating expense appropriation, and that would require action by this committee.

Mr. RABAUT. That is right.

FISSIONABLE MATERIALS PROGRAM

Now we are up to fissionable materials, and we will take a statement on that.

Mr. FIELDS. On page 31, we come next to the estimates of the operating cost for the fissionable materials program. This is the largest of the Commission's programs in terms of capital outlay and operating costs.

The estimate of fund requirements for the production of fissionable materials in fiscal year 1956 is approximately 40 percent greater than in 1955. This increase is accounted for primarily by the fact that in fiscal year 1956 we will have in operation virtually all of the new plants authorized under the expansion program—in Oak Ridge, Paducah, Portsmouth, Hanford, and Savannah River. It is expected that production will increase substantially for nearly all products, while unit costs will be reduced.

To briefly cover the main cost categories which make up the fissionable materials estimate, if you would turn to page 32 you will see the different categories in which this program falls.

FEED MATERIALS

The first of the categories is feed materials. Although the production of U–235 and plutonium is ordinarily thought of in terms of gaseous diffusion plants and reactors, there is a large and complex production line called the feed materials chain leading up to and interconnecting these basic facilities.

The additional demand for feed materials in all forms and all areas of fissionable materials production will involve increased costs in 1956 over 1955. However, unit costs will be substantially reduced.

Mr. PHILLIPS. There is one important point we should ask about. Last year you estimated you would get up to a figure of $740 million. Do you remember that? How did you fall so far short?

Mr. FIELDS. What page are you on?

Mr. PHILLIPS. I am on page 31 of your justification, and page 2549 of last year's testimony.

Mr. FIELDS. That is probably the entire source and fissionable materials program, and this is just the fissionable materials part of it. I believe that would be the difference here.

Mr. RABAUT. All right.

PRODUCTION OF URANIUM 235

Mr. FIELDS. The next category covers the cost of production of uranium 235, and this is the largest single category of expense in this program. It is in item 2 on page 32, sir. The major portion of the U–235 cost estimate is required to purchase the large quantities of power used in our gaseous diffusion plants. The unit cost for power decreases considerably in 1956 because more permanent power will be available from new generators coming into operation.

PRODUCTION OF PLUTONIUM

The next category is No. 3, for the production of plutonium. This item covers the operation of our reactors and separation facilities at

Hanford and Savannah River. In fiscal year 1956 we will witness the first full year's operation of the new reactors at those locations. As a consequence, there will take place a substantial increase over the 1955 level in the production of this product, with a much lesser proportionate increase in costs resulting in a major reduction in unit costs.

In this category, which we call startup and standby, is provision for the cost of training personnel and for other preoperational costs of new production facilities or reactivated facilities prior to the time that they actually go into regular production operations. It also provides for the maintenance cost of plants in a standby status. Startup costs in 1956 will be considerably less than in 1955.

Mr. RABAUT. You have had a reduction on this all along.

Mr. FIELDS. We are getting out of the preoperational phase.

Mr. RABAUT. Now you are down to $8 million.

Mr. FIELDS. That is because the plants are actually coming into operation, and you do not have the costs you have prior to getting into operation.

PROCESS DEVELOPMENT

Mr. RABAUT. The next item, "Process development."

Mr. FIELDS. The next item is for the fissionable materials program, "Process development."

Process development efforts are directed toward achieving greater and more economical production by improving existing production processes and designing better processes. Experience has shown that funds spent on process improvements are repaid many times through increased production and lower unit costs. The estimate for 1956 is slightly less than for 1955.

Mr. RABAUT. That completes the items on this page.

Mr. PHILLIPS. I still think your estimate of expenditures in 1955 was greater than the actual expenditure.

On that basis, you see there is a difference there of about $65 million. Do you see what I mean? There is a reasonable question, I think, from the committee's standpoint.

You realize that you will be back here 12 months from now, and we will be back here in January. So that while I am not inviting you to come back for more money, I am saying that in case of emergency, we are here.

Therefore, what assurance have we that the increase of $273 million between 1955 and 1956 is actually justified at the present time to put into the budget? Are you sure now that you are going to be able to spend $947 million in the next fiscal year, or does your estimate include a cushion for safety in the hope that you will be able to spend it for needed material? Could we reduce that by a certain amount of money with the knowledge on your part that if the emergency arose we would still be here?

Mr. FIELDS. This is based, insofar as I know, on an estimate without large contingency items placed in it, and it is based on the amounts of ores we expect to get and the fact that the plants will substantially all be in operation. That is the reason for this cost going up as it does.

Mr. PHILLIPS. You have two contingencies right there. One, that the plants actually will be in operation at the time you expect them to be, which I do not think you have been very successful in meeting over the last 7 or 8 years, and that you will be able to get all of the material you need and get into production.

Mr. FIELDS. We have been getting better over the years.

M. PHILLIPS. Do you still think you will need $947 million?

Mr. FIELDS. Yes, sir; we do. The plants are coming in quite well at this time, on the schedules which we predicted when this budget was made up, and we do not have any important slippages of which I am aware.

We could give you the status of these plants in operation, if you would like, at this time, sir, That is, in more detail.

Mr. PHILLIPS. Let me make a note of it and see how we are on time. The chairman would like to move along.

WEAPONS PROGRAM

Mr. RABAUT. At this point let us take up page 49, the "Weapons program operating cost."

I note here the estimate for 1956 is $271,148,000, and the estimate for 1955 was $226,386,000, or an increase of $44,762,000—about 20 percent.

Without objection, we will put this page in the record, and we would like a statement from you at this time.

(P. 49 follows:)

WEAPONS PROGRAM—OPERATING COSTS

Program statement

Estimate, fiscal year 1956	$271, 148, 000
Estimate, fiscal year 1955	226, 386, 000
Increase	44, 762, 000

The requested amount for fiscal year 1956 for the weapons program reflects the estimate of funds needed for the development, production, and testing of atomic weapons required to meet military needs.

Research in a variety of subjects has continued to yield new developments applicable to weapons; these will be incorporated in the design of new and improved weapon models which will greatly enhance the capabilities of the Armed Forces. The developmental effort will necessitate a continuation of weapons testing activities, which are essential to advancement in this field. The major portion of the increase in the fiscal year 1956 estimate is necessary as a result of increases in number of weapons scheduled for production.

Mr. RABAUT. Off the record.

(Discussion off the record.)

Mr. FIELDS. That completes my statement on the weapons program.

REACTOR DEVELOPMENT PROGRAM

Mr. RABAUT. We will take up now "Reactor development" on page 57.

I notice in this program you have an estimated cost for fiscal 1956 of $134,582,000, while the amount in 1955 was $101,095,000, an increase of $33,487,000, or 33 percent.

Without objection, we will put pages 57 through 71 in the record.

(Pages 57 through 71 follow:)

REACTOR DEVELOPMENT PROGRAM—OPERATING COSTS

Program statement

Estimate, fiscal year 1956	$134, 582, 000
Estimate, fiscal year 1955	101, 095, 000
Increase	33, 487, 000

The most significant developments of the past year have been the enactment of the Atomic Energy Act of 1954 and the intensification of industrial interest in the civilian power reactor program. In fiscal year 1956 it is the AEC objective to continue the 5-year reactor program initiated in fiscal year 1954 and to accelerate the time when nuclear power will become economically competitive.

The foundation on which the civilian power reactor program rests is the experimental 5-year program of reactor development which is predominantly Government financed and is being carried out mainly in the national laboratories. The experimental reactors, including a power breeder to be constructed as a part of this program, are not expected to be economic. They will provide technical information needed to design larger and more economical plants which private industry is expected to design and build. The 5-year program provides for the development of 5 distinct technological approaches.

In addition, the Commission proposes during 1956 to initiate an acceleration of the reactor program in order to advance the time when nuclear power will become economically competitive. Under the acceleration program, the Commission will consider providing certain types of cooperation and assistance to those industrial companies willing to assume the risk of construction, ownership, and operation of power reactors designed to demonstrate the practical value of such facilities for industrial power.

Research and development will be conducted on an increasing scale in 1956 on reactors to propel naval vessels and military aircraft and to meet military needs for heat and power in remote areas. This research also provides information useful in the development of civilian power reactors.

Work on specific reactor designs constitutes about 87 percent of the scientific and technical effort in the reactor development program. The remainder covers advanced engineering and development, applicable to many reactor designs, on reactor materials and components, systems for heat transfer, shielding, and chemical processing; operation of the experimental facilities at the national reactor testing station in Idaho, and conduct of schools of reactor technology for scientific and engineering personnel in both Government and industry and from foreign countries.

Summary of estimates by category

Category	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
1. Civilian power reactor development	$18,974,600	$25,804,000	$35,430,000
2. Army power reactors	0	678,000	2,100,000
3. Naval propulsion reactor program	26,498,081	28,270,000	34,268,000
4. Aircraft propulsion reactor program	14,572,118	21,575,000	37,900,000
5. Special classified projects	7,607,638	6,159,000	7,200,000
6. Advanced engineering and development	12,104,427	12,874,000	11,950,000
7. Operation of service facilities	7,846,210	5,735,000	5,734,000
Total reactor development program	[1] 87,603,074	[1] 101,095,000	134,582,000

[1] Includes for comparability under category No. 3 in fiscal year 1954, $1,300,000 for work funded by the Department of the Navy, and category No. 5, $1,451,000 in fiscal year 1954 and $3,588,000 in fiscal year 1955 previously budgeted under other programs.

JUSTIFICATION OF CATEGORIES

1. Civilian power reactor development, $35,430,000

The foundation of the national effort toward the objective of large-scale generation of economic electrical power from atomic energy is the 5-year program of power reactor development initiated in fiscal year 1954. This program provides for development of five distinct reactor types. The specific reactor designs presently included in the program are not expected to produce economically competitive power but will provide the technical knowledge and experience needed to design larger and more economical plants. During fiscal year 1956 it is expected that two of these reactor experiments (sodium reactor experiment and homogeneous reactor experiment), will be placed in operation; the third reactor (boiling water experiment) will be in the final stages of assembly; construction of the fourth reactor (pressurized water reactor) will be well underway; and construction of the fifth reactor (experimental breeder reactor No. 2) will be initiated.

The national interest requires that the 1954 plan for developing nuclear power technology be accelerated. The Atomic Energy Commission proposes to initiate

such a program in fiscal year 1956. The above estimate of $35,430,000 provides $10 million for cost to be incurred in fiscal year 1956 to expand the engineering development on nuclear power reactors and to advance the time when nuclear power will become economically competitive. It is expected that these funds will be used to assist industry in such a program and to expand the Atomic Energy Commission programs which promise to contribute most to further progress in power reactor technology.

(a) Pressurized water reactor: Fiscal year 1955, $9,475,000; fiscal year 1956, $7,500,000.—The pressurized water reactor (PWR) project was started in fiscal year 1954 in order to permit a major advance toward realization of civilian nuclear power. In response to invitations by the Commission to utility and industrial groups to participate in and make contributions to this project, the proposal submitted by Duquesne Light Co. of Pittsburgh, was the most favorable to the Government and the Atomic Energy Commission entered into an agreement with this company. Westinghouse Electric Corp. is the Commission's principal contractor for the design, development, and construction of the reactor portion of the plant. The reactor is expected to generate sufficient heat to produce a minimum of 60,000 kilowatts of salable electricity in addition to meeting the electricity requirements of the plant itself. Duquesne's participation will include furnishing a site for the entire project; building and operating a new electric generating plant; operating the reactor part of the plant, and assuming $5 million of the cost of design, development, and construction of the reactor portion of the plant. Including revenues from the sale of steam generated by the reactor, the Duquesne participation is expected to reduce by an estimated $30 million the expenditure the Government would have to make during the period of construction and 5 years of operation if it undertook the full cost of the project. The site selected for the pressurized water reactor is on the Ohio River at Shippingport, Pa., 25 miles from Pittsburgh.

In fiscal year 1956 construction of this plant will be well underway. Some of the major items of equipment of the primary plant and the steam plant will be delivered and their installation started. Orders will be placed for all components which have not previously been ordered. The most critical item is the reactor core. The effort on an expanded element development program will be intensified. Critical experiments to develop the characteristics of the selected types from a physics standpoint will be conducted. An expanded effort to develop improved control mechanisms will also be carried out. Although not all of the problems can be anticipated, it is now expected that the experimental and theoretical nuclear studies will be at the stage where fabrication of the selected core can be started. The design of the site fuel-handling facilities will be completed and construction of these facilities will commence.

The fiscal year 1956 research and development estimate is made up of the following major cost categories:

Core design, reactor physics and experiments	$2, 730, 000
Core materials development	2, 270, 000
Plant components development	1, 350, 000
Development of overall plant control (instrumentation, etc.)	1, 150, 000
Total	7, 500, 000

(b) Boiling water reactor: fiscal year 1955, $3,817,000; fiscal year 1956, $4,500,000.—This activity is focused on the assembly of a boiling water experimental reactor designed to generate 5,000 kilowatts of electricity using steam formed in the reactor core and development work applicable to full-scale central station power reactors. The experiment is scheduled for operation early in fiscal year 1957. The major portion of the reactor-plant cost will be incurred during fiscal year 1956. The funds requested for this activity in fiscal year 1956 are based upon the following estimates:

Construction of boiling water experimental reactor plant	$2, 210, 000
Development and design of boiling water experimental reactor	610, 000
Fuel element development in connection with full-scale reactors	500, 000
Design and evaluation of fuel alloys which are corrosion resistant in high-temperature water and can be fabricated for use in water-cooled power reactors	600, 000
Boiling investigations including heat transfer, fluid flow, scale deposition, entrainment, etc	450, 000
Control evaluation and design	130, 000
Total	4, 500, 000

(c) *Homogeneous reactor: fiscal year 1955, $6,600,000; fiscal year 1956, $7,200,000.*—The homogeneous reactor experiment No. 2 (or homogeneous reactor test) is an integral part of this program and will be completed and placed in operation about the middle of fiscal year 1956. The total estimated cost of the reactor experiment is $1,825,000. The continuing laboratory development program will center around operation of the homogeneous reactor experiment No. 2 and its associated chemical pilot plant. It is expected that progress made in the design studies, chemical problems, and reactor physics will permit plans to be formulated during fiscal year 1956 for modifications and improvements in the homogeneous reactor experiment No. 2 and for making very specific plans regarding the next scale homogeneous reactor powerplant. Some of the components of a large scale reactor will be available for testing and performance studies. The development program will be conducted in preparation for construction of a larger scale reactor with components generally suitable for a full scale plant.

Details of the estimates are as follows:

Item	Fiscal year 1955	Fiscal year 1956
Laboratory research and development	$5,265,000	$6,360,000
Design, fabrication, and installation of homogeneous reactor experiment No. 2	1,335,000	490,000
Operation of homogeneous reactor experiment No. 2	0	350,000
Total	6,600,000	7,200,000

(d) *Fast power breeder reactor: Fiscal year 1955, $3,660,000; fiscal year 1956, $4,130,000.*—The intensive program of research and development on basic elements of the design of fast reactor systems will reach a point of major decision in fiscal year 1956. All major operations of the plant should be demonstrated including the reactor and appurtenances, the fuel process-fabrication cycle, the liquid metal system components, and the special power cycle components peculiar to the plant. The engineering specifications for these units will be essentially completed. Necessary nuclear engineering data will be obtained from the fast critical assembly. The recovery process will be demonstrated and an integrated cycle will be simulated. The fuel process requirements should be established. The increase of approximately $500,000 over fiscal year 1955 is for increased attention to large scale components experiments essential to the fast breeder reactor program. The estimate for fiscal year 1956 is based upon the following:

Engineering design and development of experimental breeder reactor No. 2	$3,100,000
Development of experimental breeder reactor No. 2 components, including mock-ups and testing	855,000
Fast critical experiments	620,000
ANL design	505,000
Other engineering design and development work	1,120,000
Reactor fuel development, fabrication and tests of fuel elements	500,000
Structural materials development	175,000
Chemical processing	355,000
Total	4,130,000

(e) *Sodium graphite reactor: Fiscal year 1955, $2,252,000; fiscal year 1956, $2,100,000.*—This program is being carried out in accordance with terms of a contract between the Commission and North American Aviation, Inc., whereby the company contributes approximately 25 percent of the total cost. The total estimated cost of this project for the term of the contract (fiscal year 1954 through fiscal year 1958), including fabrication of the reactor experiment is $10 million, of which North American Aviation, Inc. will provide $2,500,000, including necessary capital expenditures. The bulk of the North American Aviation capital cost will be incurred in fiscal year 1955. The program centers around design, assembly, and operation of a sodium reactor experiment (SRE) which is scheduled to be completed and placed in operation in fiscal year 1956. The total cost of fabrication and associated equipment of the reactor experiment is $3,500,000,

of which it is estimated that half will occur in fiscal year 1955 and half in fiscal year 1956. The estimates for fiscal year 1955 and fiscal year 1956 are as follows:

	Fiscal year 1955	Fiscal year 1956
Research, design, and development	$1,597,000	$1,060,000
SRE fabrication costs, including NAA capital expenditures	1,876,000	1,698,000
Total	3,473,000	2,758,000
NAA cost	1,221,000	658,000
AEC cost	2,252,000	2,100,000

(f) Power reactors acceleration program: Fiscal year 1955, 0; fiscal year 1956, $10 million.—In addition to the development of reactors under the 5-year power reactor development program, the Commission proposes during fiscal year 1956 to initiate an accelerated reactor program to bring private resources into the development of engineering information on the performance of nuclear power reactors and to expand the atomic energy programs which promise to contribute most to further progress in power reactor technology. Under this program, the Commission will consider providing certain types of cooperation and assistance to those industrial companies willing to assume the risk of construction, ownership, and operation of power reactors designed to demonstrate the practical value of such facilities for industrial power.

The types of assistance which would be provided are:

(*a*) waiving the established charges for loan of source and special nuclear material for a period of 7 years;

(*b*) performing in AEC laboratories without charge mutually agreed upon research and development; and

(*c*) entering into research and development contracts for the technical and economic information resulting from development, construction and operation of power demonstration reactors.

The assistance to be given will be determined upon competitive evaluation of proposals. Owners will be charged for all AEC-loaned materials which will be consumed in the course of the project and will be paid a fair price for all special nuclear material produced. It is expected that knowledge and experience obtained through these projects will contribute substantially to the reduction in costs and improvement in efficiency of future plants of similar design concepts. Information obtained will be distributed as appropriate by the AEC to private and public organizations.

For this program, the budget provides $50 million under the "Operating expenses" appropriation for obligations in 1956. It is estimated that costs to be incurred during 1956 will amount to $10 million, the balance being included in unpaid obligations at the end of fiscal year 1956.

2. Army power reactors, $2,100,000

The objective of this program is to establish the feasibility of using nuclear plants to fulfill power requirements in relatively inaccessible areas of military operations. The Department of Defense has advised that a military requirement exists for the development of such nuclear power plants and that emphasis should be placed on air transportability. The initial cost of a nuclear powerplant is expected to be offset by the freedom from conventional fuels, savings in logistic effort, and reduction in manpower requirements.

In order to meet the objective of this program a number of reactor concepts potentially important in fulfilling definite military requirements must be investigated and developed.

The first step in this program is the construction of the Army package power reactor (APPR–1). This plant will employ a pressurized-water reactor. APPR–1 design parameters were dictated by the ability of pressurized-water reactors to satisfy a significant portion of the military needs with minimum development. An evaluation of several other reactor types in terms of size, simplicity, long life, and degree of mobility desired in military land-based plants is planned in fiscal year 1956. Extrapolations of design criteria and component tests to regions of interest will be conducted on the boiling heterogeneous and gas-cooled reactor principles. Experimental developments of the promising homogeneous boiling reactor are included in the program as well as studies to encourage radically new low power reactor concepts.

Further development of principles characteristic of pressurized-water reactors for military use will continue significantly into fiscal year 1956. These developments and experiments include fuel element processing and fabrication, materials evaluation, and testing of an APPR-type core to verify safety features of the design since construction is to be adjacent to a populated area.

The extent of industrial interest in the APPR project, evidenced by the number of proposals submitted, has increased in turn the interest in the program on the part of other military services, which will receive benefits through the increased activity specified above.

All of the activities being considered will add to the technology required for the civilian as well as the military power programs. Funds required in fiscal year 1956 are estimated as follows:

	Fiscal year 1955	Fiscal year 1956
Boiling package reactor	$55,000	$178,000
Low-power reactors	150,000	472,000
Gas-cooled systems	100,000	500,000
Pressurized-water systems	373,000	950,000
Total	678,000	2,100,000

3. Naval propulsion reactor program, $34,268,000

This category contains development programs for specific reactors for naval propulsion plants. These projects constitute a program by the Atomic Energy Commission and the Department of the Navy. This program is recognized as an important accelerating influence in the practical development of all nuclear plants.

There are two projects in the initial program, the submarine thermal reactor (STR) and the submarine intermediate reactor (SIR). A prototype of the STR (mark I) has been operating radioactively at the National Reactor Test Station in Idaho for well over a year. A second STR (mark II) has been installed in the U. S. S. *Nautilus* and is being operationally tested. The SIR prototype (mark A) has been completed at West Milton, N. Y., and is soon to start nonradioactive test. A second SIR (mark B) is being produced for installation in the U. S. S. *Sea Wolf*, now under construction.

The increased fund requirements in fiscal year 1956 are primarily the result of initiating new projects in addition to accelerating the development work which is already underway on an advanced nuclear powerplant for a submarine, in order to provide the Navy with nuclear powerplants having a wide range of power output and which can be adapted to those naval vessels for which nuclear power is desirable.

The estimates are based on the following development items:

	Fiscal year 1955	Fiscal year 1956
Research and development on the initial projects (STR and SIR)	$14,699,000	$9,950,000
Operation of experimental prototypes (STR and SIR)	5,029,000	5,029,000
Fuel fabrication for experimental prototype reactors (STR and SIR)	2,454,000	3,794,000
Research and development on new projects	6,088,000	14,545,000
Fuel fabrication for experimental prototype reactors (new projects)	0	950,000
Total	28,270,000	34,268,000

4 Aircraft propulsion reactor program, $37,900,000

The aircraft propulsion reactor program is directed toward the fabrication and testing of nuclear reactors suitable for use in an aircraft propulsion system. Research and development on other components of the propulsion system is covered by Air Force contracts.

The fiscal year 1956 estimate provides for increased emphasis on the research and development program, the fabrication of major experiments, and initiation of operation of the ground test facilities at the National Reactor Testing Station.

5. Special classified projects, $7,200,000

Justification for these projects is contained on classified pages 82 through 85.

6. Advanced engineering and development, $11,950,000

Advanced engineering and development is comprised of the accumulation of engineering data and development work to support all reactor projects. Although the problems being solved are specific, the applications are not. Broad reactor engineering techniques are developed so that the solution to any particular problem is obtained directly or through interpolation or extrapolation of developed information. This work is done approximately half in national laboratories and half in universities, engineering institutions, other Government agencies and industry.

Specific reactor projects are, in general, an outgrowth of general development work. Major features of each current specific project resulted from such work done in the past. A healthy long-range reactor development program requires that new ideas, materials, components, and processes be continually investigated, that advanced reactor designs be conceived and evaluated, and that associated facilities such as those for fuel fabrication, chemical processing, and waste treatment are feasible from an engineering standpoint.

The work in this category covers the whole field of sciences and engineering implied by the foregoing needs. In addition, there is a steady effort aimed at reducing costs of materials, of fabricated components, and of processing. The work is primarily applied engineering rather than basic engineering and the program attempts to strike a proper balance between immediate problems and the long-range problems associated with advanced concepts.

Primary emphasis in fiscal year 1956 will be placed on the development of new and improved materials for reactor components, particularly fuel elements, the development of new chemical processes for the separation of uranium, plutonium, and fission products from irradiated fuel elements, and core tests. Major attention will be given to the problems associated with the control and safety of nuclear reactors and the effects of radiations on primary reactor components. Attention will be given to component work related to the improvement of existing production facilities and to specific researches of particular interest to the development of industrial power reactors. Work will continue in the fields of sanitary engineering, fission products utilization, heat transfer, waste treatment process development, nuclear properties, measurements, and the design and evaluation of advanced reactor concepts.

7. Operation of service facilities, $5,734,000

This category of items provides for the development of radiation damage data on materials, reclaiming fissionable materials from spent reactor fuels, provision of services at the National Reactor Testing Station to isolated experimental facilities, training of design and operating engineers in the field of reactor technology, standby costs of special production facilities, and protection of highly classified shipments originating in or passing through Chicago.

(*a*) *Materials testing reactor—operation: Fiscal year 1955, $2,460,000; fiscal year 1956, $2,500,000.*—The materials testing reactor is operated at the National Reactor Testing Station as a testing, research and development tool for determining the effect of neutron irradiations on materials, for producing transmutation products, and for performance studies of this new type reactor. The estimated gross cost of operating the reactor in fiscal year 1956 is $3,087,000. Based on previous experience it is estimated that work done for other accounts and resulting in credits to this account will amount to $587,000, leaving a net budgeted cost of $2,500,000.

The number of experiments that are simultaneously being irradiated in the reactor has increased rapidly since startup with nearly all available reactor positions in the high flux areas now filled. During fiscal year 1956 operations will be continued approximately at capacity, and it is expected that the trend toward more complex experiments will continue.

(*b*) *Chemical processing plant—operation: Fiscal year 1955, $266,000; fiscal year 1956, $316,000.*—The chemical processing plant at the National Reactor Testing Station will continue operations in fiscal year 1956 to recover enriched uranium from irradiated fuel elements. The total estimated cost of operating the plant in fiscal year 1956 is $3,538,000. Of this total, costs of $3,222,000 are applicable to and are budgeted under other accounts. The amount of $316,000 represents the net cost chargeable to this account and provides for the uranium recovery from fuel elements from other than production reactors.

(*c*) *National reactor testing station—operation: Fiscal year 1955, $2,416,000; fiscal year 1956, $2,420,000.*—This is a continuing activity and provides for the net cost of operation of the central services and facilities at the National Reactor Testing Station which are required in support of the technical plants and experi-

ments at the station. Central services include stationwide security, health physics, fire protection, communications, medical and safety services, technical library, laundry, bus and cafeteria operations, warehousing, machine shops and maintenance shops and maintenance of interarea roads, powerlines, and waterlines. The estimated total cost of operation in fiscal year 1956 is $2,672,000, of which $252,000 will be recovered through charges to others for services. The net costs of $2,420,000 are budgeted here.

(*d*) *Oak Ridge School of Reactor Technology: Fiscal year 1955, $400,000; fiscal year 1956, $280,000.*—The objective of this program is the training of design and development engineers in the field of reactor technology. Initiated in March 1950, the school has now graduated approximately 288 highly trained scientists and engineers who are, almost without exception, now engaged in some phase of reactor development with the Atomic Energy Commission, its contractors, or the Department of Defense. The demand for these specialists far exceeds the supply and no foreseeable saturation in the demand can be anticipated.

The enrollment for fiscal year 1955 and 1956 will be approximately 80, which is the capacity of present facilities. Two classes of students are represented: (A) Recent college graduates with a B. S. degree in science or engineering, and (B) representatives sponsored by industry and Government agencies. Category (A) students are paid a salary by the operating contractor, Union Carbide & Carbon Co., while category (B) students remain on the payroll of the organization which sponsored them. The cost reduction ($120,000) planned for fiscal year 1956 results from increase in category (B) students and initiation of tuition charge to private industrial firms sponsoring such students.

(*e*) *Standby—Special reactor materials production and fabrication facilities: Fiscal year 1955, $111,000, fiscal year 1956, $125,000.*—This estimate provides for maintaining the Luckey, Ohio, beryllium production plant ($47,500) and the Painesville, Ohio, beryllium oxide fusion plant ($2,500) in standby status ready for reactivation should requirements beyond stockpile availability develop. Since there is still considerable doubt about the magnitude of the requirement for zirconium and hafnium, it is planned to hold the AEC facilities located at the Bureau of Mines, Albany, Oreg., plant in standby ($75,000) until it is definitely determined there is no longer a need for them. Standby costs include salaries of guards and maintenance employees, maintenance supplies, and utilities, and related overhead costs.

(*f*) *Security shipments: Fiscal year 1955, $82,000; fiscal year 1956, $93,000.*—This estimate is for coordinating, escorting, and providing armed protection for shipments of highly classified materials and documents, as well as materials that cannot be transported by common carrier because of health and safety hazards.

Mr. RABAUT. I note that there is an increase of approximately 33 percent in this item. No doubt it is because of your effort to accelerate the use of atomic energy for other than weapons construction.

In your justifications, emphasis is placed on intensification of interest in the civilian power program, though it would appear that the aircraft propulsion reactor program and the naval propulsion reactor program account for two-thirds of the increase.

We would like you to comment on those points.

BASIS FOR INCREASES IN PROGRAM

Mr. FIELDS. That is true, sir. The largest increase in the request—if you look on page 59 you will see the categories set forth there—is in the aircraft propulsion reactor program, item 4, and there is an increase in the naval propulsion reactor program. But additionally, we are requesting an increase in the civilian power reactor development program, which is in item 1. This is an increase of something like $10 million.

The reason the larger increase is in the aircraft and naval propulsion programs is the status of the programs and the progress made to date. They are at a stage where they can expend more in the next year and should expend more in order that those developments can go forward.

CIVILIAN POWER REACTOR PROGRAM

We believe that in the civilian power reactor program we have asked for funds which will enable this program to move rapidly. We have made estimates which show that for the operation of the 5-year program—there are 5 reactor projects in it—these should have accrued costs of something like $25 million.

We are asking for a contingency item in here, I should say a power reactor acceleration project item, in the amount of $10 million, so that those civilian reactor programs can be accelerated. That is included in the $35 million item under item 1.

I am not sure that I was completely responsive to your question, sir, but it is the status of the programs in the naval and aircraft reactor programs which indicates that we will have increased costs in them this year.

Mr. RABAUT. Is TVA or any other public power group participating in this reactor development program?

Mr. FIELDS. They are participating to the extent that we discussed yesterday, in that there is a proposal in from one group. Could I ask Dr. Davis to take that?

Dr. DAVIS. The Consumers Public Power of Nebraska have made a proposal; and TVA, and several of the REA groups and a number of public utilities are in the study program, where they are spending their own money to study power reactors, but the Commission furnishes them with the information which has been developed on power reactors.

Mr. RABAUT. Is that a big expense to the Commission?

Dr. DAVIS. It involves us in some expense to make the reports available.

Mr. RABAUT. Some expense. What does that mean?

Dr. DAVIS. On the order of a few thousand dollars per year for each of the groups.

Mr. RABAUT. What would that mean?

Dr. DAVIS. It would depend on the size of the group, which would amount to, I would say, perhaps $5,000 in 1 case.

Mr. RABAUT. To a maximum of what?

Dr. DAVIS. Say $25,000, or something of that sort, for a large group.

Mr. RABAUT. All right.

PRESSURIZED WATER REACTOR

On page 60 of your justifications, you state that over a 5-year period the Duquesne Light Co. will save the Government $30 million, and has assumed around $5 million of the cost of a pressurized water-reactor plant. Have you figures reflecting what the total outlay of Duquesne will be, what the outlay of the Government will be and, other than the experience, what will be realized, and by whom?

Mr. FIELDS. Dr. Davis, could you answer that question? That is a question we referred to yesterday.

Mr. RABAUT. We only took up Duquesne for the reason that that plant was mentioned. There is not anything personal as to Duquesne.

Dr. DAVIS. In this case they will build the turbogenerator portion of the plant, which will cost them on the order of about $9 million. They

will give to us $5 million which will be spent on the nuclear portion of the plant.

We estimate the cost of the nuclear portion of the plant at about $37.5 million, or a net of about $32.5 million after subtracting the $5 million which they will contribute for the project.

Mr. RABAUT. Who will contribute?

Dr. DAVIS. The Duquesne Power & Light Co. will contribute.

So far as the total construction is concerned, we will be paying $32.5 million and they will be paying roughly $14 million.

We will own the nuclear portion of the plant and will supervise its operation, but Duquesne will supply the operators to run the nuclear and other portions of the plant.

Mr. RABAUT. When will you recapture your $32 million?

Dr. DAVIS. We will not recapture it except in the sense of an experiment which will show us—it will be the first full-scale power reactor in this country, and it will give us the information which we can get only by building such an experiment.

Basically it is an experimental reactor, although it is also a prototype of a full-scale power-producing reactor, and is the first such reactor.

Mr. RABAUT. Are you, as an organization, ready to do that in other parts of the country, too?

Dr. DAVIS. This power-demonstration proposal which was referred to yesterday is the next step in this process, and as we mentioned, we have four proposals under this program to build full-scale powerplants. In addition, Consolidated Edison has made a fifth proposal which is an application for a license to build a full-scale powerplant with their own money.

Mr. RABAUT. With their own money?

Dr. DAVIS. This would be entirely with their own money.

Mr. RABAUT. This happens to be, then, a test—what would you call it?

Dr. DAVIS. I think I would call it a prototype full-scale power reactor.

Mr. FIELDS. At the stage when that was started, industry was not in a position to go to the extent, apparently, that they are now in these power proposals. This was started when?

Dr. DAVIS. It was started about a year and a half ago.

Mr. RABAUT. Is it the thought of the corporations or the thought of your agency to step out and spend money in this amount in various parts of the country for pilot programs? That is what they are. Are you going to build pilot plants of this type?

Mr. FIELDS. Our program is a 5-year reactor program in which we would be doing reactor experiments. There is a great deal to be done in making power economical. First of all, the capital outlays which have to go into these plants are large. The fuel fabrication is a cost which must come down for it to become economical. The processing of the fuels themselves, the very special chemical processes, are still expensive. The actual burnup of the fuel is a very small item in the power iteself.

So that our problem is to go forward with research and development, which will decrease the capital outlays necessary in reactors, and develop cheaper fuel fabrication techniques and methods of reprocessing this fuel which has to be done periodically.

Our 5-year program has 5 other experiments or pilot plants or small reactors going ahead to develop the technology.

What the Commission is proposing, and in accordance with the new act and the authorities permitted in that, is that now is the time to permit American industry to come in to the extent that they can, and broaden the base here and get them to actually produce powerplants of the order of, say, 100,000 kilowatts, rather than the Commission budgeting for these actual power stations themselves.

What we propose in our program would be to go forward and develop reactor technology, and now and then a reactor itself, but on the power program to encourage industry to pick this up and to move forward with actual central station powerplants themselves.

Mr. RABAUT. How much money has the Government invested in this agency to date?

Mr. FIELDS. Do you mean in the reactor program?

Mr. RABAUT. No, the whole agency. How much money has the taxpayer gone down in his pocket for?

Mr. PHILLIPS. Do you want to include the Manhattan project, or start with the end of the Manhattan project?

Mr. RABAUT. Total costs.

Mr. MCCARTHY. Expenditures through 1955, through the end of this fiscal year, are estimated at $12,230 million. That includes what has been spent by the Manhattan District.

Mr. RABAUT. That is what the man on the street has paid. The point I am thinking about is this. What we want to do is to get the benefits back to the man on the street. That is the fellow who paid for it. We want industry to benefit by it, too, but we hope that the agency will be very cognizant of the expenditures which have been made. Of course, over and above the developments in this agency for peaceful purposes, there is the great protection which has been developed for our country. It has been the development which really resulted in a new source of power which we are talking about today. So it is really the father of the new power toward which we look with great hope.

But the cost of all this has been a cost to the people of the country.

I can understand that if industry takes hold of it, you will have a teaching program, too. They have to learn about it, and the best way for men to learn about anything is to get into contact with it. But let us avoid making it any sort of a giveaway program—you know, 1 horse and 1 rabbit, 1 of those sandwiches, that is going to be a horse and rabbit sandwich. You grind up 1 horse and 1 rabbit. Let us not be the horse in the deal.

You state that Duquesne has spent $14 million, but will save the United States $30 million by the end of 5 years. What does this mean? Are they going to save the United States $5 million of $30 million by its operating expenses? We are putting in $32 million according to the figures here.

Mr. FIELDS. The additional saving is between $14 million and the $30 million. It would be on the operating savings.

Mr. RABAUT. We cannot spend a lot of time on this, but let us find out something about this one case, just so the committee is informed as to how this thing operates.

Dr. DAVIS. Our original estimate, or what we originally contemplated doing was to spend——

Mr. RABAUT. Before you start, may I say this. This committee is not against progress, and we want to assist in every way possible toward progress, but we do want to know something about this relationship and how much more money John Doe, the taxpayer, no matter how high he is or how low he is, is going to be contributing to this use without ever receiving any return. Of course he has the return of national defense, I have to admit that and I want to admit it, and I want to admit it in a loud voice and I want it lit up with neon lights, too. But that is only one part of it. Just because we had that, we do not want to let the other run out of the loose end of a sieve.

Dr. DAVIS. I think we should say first, of the very large amounts of money that have been spent by the Atomic Energy Commission, only a very small amount has ever been spent on the development of power reactors.

It was considered about 2 years ago or a year and a half ago that in order to be able to build full-scale power reactors, which we felt was a logical objective, it would be necessary to construct at least a few essentially full-sized prototype power reactors in order to find out how they operate, in order to find out what the problems are of actually building such power reactors.

So at that time the best reactor which could be built for this purpose, and the only one which could be built at that stage of development of the technology, was considered to be the pressurized-water reactor, what is called the PWR.

It was considered that the total project would cost in the order of $100 million. That is my recollection of the total figures, including research and development and construction of it and operation of the plant. Of this, around $15 million was the contemplated cost at that time of the conventional portion of the plant, the turbogenerators and the other things which would have to be built in order to have a complete powerplant.

Under the Duquesne arrangement, Duquesne has in effect contributed the entire cost of this part of the plant which was anticipated to be roughly $15 million. They have also contributed $5 million toward the construction of the reactor itself. They have also offered to provide 100 men, up to 100 men to operate the plant, which under a completely AEC-operated installation would have been entirely AEC employees. These will now be Duquesne Light & Power Co. employees, and they will pay their salaries and all of the overhead.

In addition to that, the Duquesne Light & Power Co. is going to pay the Commission the equivalent of 8 mills per kilowatt-hour, simply for the steam as it comes from the nuclear powerplant.

Mr. RABAUT. How much?

Dr. DAVIS. Eight mills per kilowatt-hour. This will be paid on the basis of the steam from the nuclear powerplant.

Mr. RABAUT. This is a sort of a pilot operation to try to find out just what this will do out in the commercial world.

Dr. DAVIS. That is correct, and Duquesne is willing to make that contribution.

Mr. RABAUT. They are going to turn this power into their own transmission system and transmit this power over their lines with power developed in other ways?

Dr. DAVIS. That is correct.

Mr. RABAUT. Then they are going to start to compare costs between the operation of this facility and the normal operations by steam, or however their power is generated.

Dr. DAVIS. It is important to bear in mind that this first plant would not and will not be an economical nuclear powerplant. It will miss it by quite a wide mark. Being the first one, it is going to cost probably several times the cost of power in a conventional powerplant. But only by building it can you find out how to get the cost down in the succeeding generations of nuclear powerplants. You add all of these up and compare an AEC job with the arrangement we have here, and it is about a $33 million difference in the total cost.

Mr. RABAUT. That is fine, and personally I can give approval to it. But I want to say this: Just because the activities in the creation of these particular plants for power are a small part of the tremendous amount of money which was put into the atomic energy program, you understand, is no reason for saying that it is the only money for this purpose. You could never have gotten it with $100,000 or with $100,000 worth of study. The other had to be developed. This might be a byproduct of what we were trying to do in creating the bomb. Nevertheless, if great benefits come from it, some of it should be considered as a part of the cost as far as John Doe, the taxpayer, is concerned.

I am not trying to make a speech for the record, but I want to say that very emphatically. It comes right from the people, and the people are the ones who paid for this, and it is a tremendous amount of money. We should be very careful to see that some benefits are going to accrue back to the people of the United States.

Mr. PHILLIPS. I concur with what you said, and point out that we have a benefit, of course, as the witness has already testified, in that we can sit in a laboratory or make a pilot plant, but we actually do not know how it is going to operate under actual working conditions. We subsidize, I suppose you would call it, the Duquesne Co. only to the extent that it is going to cost them 2 or 3 or 4 times the cost of the power, such as we do with our merchant marine, so we can get it going and operating.

There are other things which come in with a full-sized test, even little things as was testified to, as you remember, in February before the Joint Committee on Atomic Energy. We have liability insurance and all of these factors which have to be tried out.

Dr. LIBBY. I think we should note here that this Duquesne arrangement is a little different from what we are now doing. It was set up under the old act, and under the new act we have 4 propositions made us by industry, which are really in many respects much more favorable to the Government, that is, the percentage contributed by industry is larger in these 4 propositions.

This is no criticism of Duquesne. They helped us pioneer. But we are getting a larger percentage, and I think the figures are about 4-to-1.

Mr. PHILLIPS. I think perhaps I used the word "subsidy" in reverse. I think in this case Duquesne is subsidizing the United States by putting in money on the experimental trial.

Mr. FOGARTY. I was going to ask that question. This contract, then, was originated before the law was passed in 1954.

Dr. LIBBY. It is under the old law.

Mr. FOGARTY. So the only ones who can benefit from the know-how which has been developed by tax dollars are those concerned with the most money, with the most assets, apparently. That would be a fair assumption, on a bidding proposition, and these contracts are on a bidding proposition; are they not?

Dr. LIBBY. We have five criteria, I think it is, if I can remember them all.

No. 1 is furthering the art. Our principal objective is to get atomic power. That is our objective. That is our principal peacetime objective—to get atomic power.

We have to consider these propositions from this point of view, primarily, and then, of course, the money comes in, and what are some of the others? There is financial responsibility, and the organization, and so on.

But a principal one is the contribution the proposition will make to the development of atomic power.

Mr. FOGARTY. You say that you have 4 or 5 criteria, and you have to admit they all amount to one thing: that the only ones who could meet all of those requirements would be someone like Duquesne or some of the other larger utilities in the country. The smaller ones apparently cannot take advantage of any know-how that you people have developed over the past 10 years.

Dr. LIBBY. We do have a proposition from Consumers Public Power in Nebraska, so we do have one.

Mr. FIELDS. And this information is available to all of them, in that by access agreements there is no condition that they have to be going forward with a project to get access to the information. There is a lot of information that has been downgraded from its high classification to the confidential area, and by study agreements and access agreements this information is available to anyone.

It is perfectly true that if they are going ahead and construct a reactor, it does take money and talents to do it. But there is no bar to anyone insofar as making a proposal.

Mr. FOGARTY. I understand that, but unless they are backed by one of the largest groups in the country, there is nothing much they can do about it.

Dr. LIBBY. There are some things, Mr. Fogarty. In talking with Mr. Ellis the other day about this, he made some remarks I think somewhat similar to that.

I think the principal difficulty we have is to get enough men trained properly in the technical fields to do this job. You can help us in this way: You can tell your constituents to tell their sons to go to engineering school and to work in this business. That is really the most serious bottleneck in the whole business.

Mr. FOGARTY. What are you doing about it?

Dr. LIBBY. We are trying very hard, first, to let it be known that there is a desperate need, and to do everything we can to encourage the colleges and schools to get into this business. We are actually running a school of our own because of the fact there isn't really a school in the business. Last Monday we inaugurated or dedicated a reactor at the North Carolina State College, the first school in the country that has gotten a reactor, and it is in the business of teaching about this atomic power, that is, by experience.

You see, it is very different learning from books as compared to actual working. It is a very important thing, and we are trying to do everything we can on that.

Mr. FOGARTY. Are you sure you are doing enough?

Dr. LIBBY. I am not sure we are.

Mr. FOGARTY. What do you think should be done, if you are not doing enough?

Dr. LIBBY. I would think that one of the things we need is to tell people that there is this need. If we could just keep telling them this—and you gentlemen can help greatly in that, and everybody who has any knowledge of this thing can help greatly by telling people of this need—it would be very helpful.

Mr. RABAUT. Write a good article and we will put it in the Congressional Record.

Mr. FOGARTY. I do not think that will meet the problem, just telling people.

Dr. LIBBY. That is one thing.

Mr. FOGARTY. I have had some experience with these people doing medical research, and still there is a great shortage of people in that field, mainly because the return is not there. That is one of the biggest drawbacks. A young fellow goes to school today, and then he gets married—unless he has dedicated his life to research. He has to make a living, too, and it costs money to buy a house, own a car, and bring up kids. Is that not one of your real bottlenecks in engineering?

Dr. LIBBY. It certainly is.

Mr. FOGARTY. They do not pay enough money, do they?

Dr. LIBBY. It is one of the troubles.

Mr. FOGARTY. They do not attract our people.

Could not the Commission do something about that? Could you not start some program which would attract more people in this field?

Dr. LIBBY. We are considering the whole problem now and considering all of these various things, consulting with the presidents and deans of the engineering schools, and trying to produce a series of remedies which will be effective. But I am afraid that the first two things—the one I mentioned and the one you mentioned—are very basic to the whole thing.

First, the interest does not seem to be there, for some reason, and why, I cannot understand. The percentage of students going into engineering and science is dropping, not only the absolute numbers but the percentages. It is partially due to salaries, I am sure, but I am not sure it is all due to that.

Mr. FOGARTY. I think something more could be done about this than your Commission has done about it.

Dr. LIBBY. We are trying.

Mr. FOGARTY. I think you could do more.

In the field of developing these power reactors, General Fields, you are asking for about a 30-percent increase this year, is that right?

Mr. FIELDS. Yes, sir, it is about 33 percent, I believe.

Mr. FOGARTY. Do you think that is enough?

Mr. FIELDS. We think it is enough. Actually, in that 33 percent is a request on page 64 for $10 million for the power reactor acceleration program. That is what we estimate would be additional accrued costs to accelerate this program. But along with that, in unpaid

obligations at the end of the year we are asking an increase of $40 million. That is for projects which could be started for acceleration of the power reactor program. But it would not appear as accrued costs until 1957 or subsequent years. So it does not show here.

So what we are asking for for acceleration of the program is $10 million in additional costs, with $40 million more in unliquidated balances at the end of the fiscal year.

NUCLEAR-POWERED MERCHANT SHIP

Mr. FOGARTY. Is that the same thing I read in the paper yesterday, where the President is sending up a supplemental budget request of $139 million which includes a request for the development of a nuclear-powered merchant ship.

Mr. MCCARTHY. That supplemental includes only the Maritime Commission portion of that, Mr. Fogarty. That would be the hull cost. The Commission's reactor cost is involved in the authorization for the plant and equipment bill, which is presently before the Joint Committee.

Mr. FOGARTY. How much is that?

Mr. MCCARTHY. It is $21 million.

Mr. FOGARTY. It would cost about $21 million to develop the plant and the propulsion machinery?

Mr. MCCARTHY. Yes, sir.

Mr. FOGARTY. And how much to build the hull?

Mr. FIELDS. It is $12.5 million for the hull. That would be the cost of the hull; it would not include the operation.

Mr. FOGARTY. How much is private industry putting up for the development of that ship?

Mr. FIELDS. The plans are just being formulated, but at the moment we know of no contribution at this stage from industry for that ship. It is planned that we would build the propulsion unit, and the Maritime Administration the hull, and industry would not be in it other than contractors to do the work.

Mr. FOGARTY. But they are going to get the benefit of the development of this nuclear-powered ship.

Mr. FIELDS. They will get the benefit from it, eventually.

Mr. FOGARTY. Were they ever asked to contribute?

Mr. FIELDS. They have not been asked, to my knowledge.

Dr. DAVIS. This is not a development job or project.

Mr. RABAUT. I asked if there was any money in this appropriation for that ship, and they said there was not.

Mr. MCCARTHY. There is nothing in here for the ship.

Mr. FOGARTY. But I understand it is pending before the Joint Committee, and we have talked about other things which are pending before the Joint Committee in this authorization bill, have we not?

Mr. FIELDS. Yes.

Mr. FOGARTY. You say it is not a development project.

Dr. DAVIS. It is not a development job. What we are going to do in order to complete it on schedule is to put into it a type of reactor which we already know how to build, and which will be very similar to the reactor in the *Nautilus*. If we were going to develop one, it would take several years longer.

Mr. FOGARTY. I was just wondering why industry was not invited to share some of the costs.

Mr. DAVIS. This reactor is something which has already been developed, and the ship is intended to be used for a fairly specific purpose, as I understand it.

Mr. FOGARTY. This one particular ship, or the fleet?

Dr. DAVIS. This one particular ship. In order to get ships which would be useful to the maritime industry, one would have to develop reactors which would be considerably cheaper, both in first cost and in operation.

Mr. FOGARTY. I do not want to take up too much time, but I would like to get on the record now what we discussed yesterday on what has been done. Give me the names of the groups of business interests in New England who are together in this power-demonstration program. Will you go over that and give me, step by step, who they are and what they are and when they applied, what their offer is, and what the chances are, so that we can have it on the record.

Dr. DAVIS. I do not believe I have with me the names of the people.

Mr. FIELDS. Could we supply the names for the record later, and perhaps give you the discussion here at this time?

YANKEE ATOMIC ELECTRIC COMPANIES

Dr. DAVIS. I might just point out in connection with one of your earlier questions that the Yankee Atomic Electric Companies are composed of 13 small utilities. You asked a question awhile ago about how small companies could get into this. I do not have their names, but it is composed of 13 small companies in the New England area.

Mr. FOGARTY. You can get the names, can you?

Dr. DAVIS. Yes.

The Detroit Edison group is composed of about 30 companies, both large and small, who are joining with them in making an offer.

So each of them is not a single company but a group of companies.

Mr. FOGARTY. I wish you would develop the background of how they were formed, who they are, the offer they have made, what the possibility is, and what the plant is. You say they can produce about 50,000 kilowatts?

Dr. DAVIS. The Yankee plant would be 100,000 kilowatts.

Mr. FOGARTY. Where do they anticipate locating?

Dr. DAVIS. They anticipate locating it in Massachusetts.

Mr. FOGARTY. Have you any idea about where?

Mr. TAMMARO. It is on the northern border of Massachusetts, I think. Is Westover up in that corner? It is somewhere up in there.

Mr. FIELDS. We can supply that for the record.

Mr. FOGARTY. Will you give me that background so that I will know what it is? I would like to know what is happening in New England as far as atomic power is concerned.

Mr. FIELDS. Do you want it for all four groups?

Mr. FOGARTY. All I am concerned about right now is the New England area. If anyone else has come up with any offers in New England in the last 2 or 3 years, give me the history of those and what the potential is and what might be expected.

Dr. DAVIS. We will be glad to do that.

(The information is as follows:)

YANKEE ATOMIC ELECTRIC CO.

The Yankee Atomic Electric Co. was organized as a Massachusetts electric company on September 27, 1954. The company proposes to build and operate an atomic powerplant, the output of which will be sold to certain New England utilities which will also provide the necessary common-stock investment.

The following table lists these companies, their generating capacity at the end of 1954, and the proposed extent of the participation in the common-stock financing of the Yankee Atomic Electric Co.:

Name	Capacity (1,000 kilowatts)	Proposed participation
		Percent
New England Power Co.	318	30
The Connecticut Light & Power Co.	540	15
Boston Edison Co.	800	9½
Central Maine Power Co.	400	9½
The Hartford Electric Light Co.	202	9½
The Connecticut Power Co.	79	
Western Massachusetts Electric Co.	240	7
Public Service Co. of New Hampshire	229	7
Montaup Electric Co.	190	4½
New Bedford Gas & Edison Light Co.	138	2½
Cambridge Electric Light Co.	60	2
Central Vermont Public Service Corp.	66	1½

The combined generating capacity of the above companies represents approximately 88 percent of the total in New England.

The proposed Yankee nuclear powerplant is designed for 100,000 kilowatts of net electrical capacity and incorporates the pressurized light-water concept. This design differs substantially from the PWR and the proposed Consolidated Edison reactor in that pressures are lower, coolant temperatures are lower and it is planned to use fuel elements of different design which, if successful, should result in lower material and fabrications costs. It is planned to locate this nuclear powerplant on the east bank of the Deerfield River in the township of Rowe, Mass., about three-quarters of a mile south of the Vermont border. Total initial cost of the plant is estimated to be approximately $25 million, excluding research and development and startup.

Based on the manufacturer's proposal it is estimated that the plant can be completed and ready for initial operation within less than 3 years after official authorization is received from the AEC and after approval has been granted by the various regulatory bodies having jurisdiction.

Yankee estimates eventual steady-state operation at 80 percent plant factor, although they expect some performance below this level during the early stages of operation.

Among the nine principal offers received from industry last year to participate in the pressurized water reactor program were two from New England organizations as follows:

1. Connecticut Light & Power Co.

2. Eastern Utilities Associates, consisting of the subsidiary utilities Blackstone Valley Gas & Electric Co., Brockton Edison Co., and the Fall River Electric Light Co.

In addition to the proposal received from the Yankee Atomic Electric Co., other proposals have been received as follows:

1. A boiling water reactor plant of 180,000 kilowatts capacity, to be completed in 1960. This plant is proposed by the nuclear power group, composed of: American Gas & Electric Service Corp., New York; Bechtel Corp., San Francisco, Calif.; Commonwealth Edison Co., Chicago, Ill.; Pacific Gas & Electric Co., San Francisco, Calif.; Union Electric Co., St. Louis, Mo.

2. A fast breeder reactor plant with 100,000 kilowatts capacity, to be completed in late 1958, proposed by Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.; Cincinnati Gas & Electric Corp., Cincinnati, Ohio; Consumers Power Co., West Jackson, Mich.; Delaware Power & Light Co., Wilmington, Del.; Detroit Edison Co., Detroit, Mich.; Long Island Lighting Co., Mineola, N. Y.; Philadelphia Electric Co., Philadelphia, Pa.; Rochester Gas & Electric Corp., Rochester, N. Y.; Toledo Edison Co., Toledo, Ohio.

3. A sodium graphite reactor plant of 75,000 kilowatt capacity, to be completed in 1959; proposed by the Consumers Public Power District of Columbus, Nebr.

The proposal received from the Yankee Atomic Electric Co. is still undergoing review and evaluation by the Atomic Energy Commission, as are the other three proposals received under the power demonstration reactor program.

In addition to the above power reactor projects contemplated in the proposals under the power demonstration reactor program, the Consolidated Edison Co. of New York has applied to the AEC for a license to build and operate entirely with private capital a nuclear power plant with a capacity of 250,000 kilowatts which the company estimates will cost about $55 million. The reactor for this plant would be light water cooled and moderated. It would take about 5 years to build. This plant combined with the other four proposals would total 705,000 kilowatts of installed electric capacity, costing about $205 million.

Mr. JENSEN. I was interested in the discussion which was had a few minutes ago regarding the dearth of electrical or nuclear engineers, or whatever you want to call them. I am on another subcommittee with Congressman Fogarty, and he mentioned the problem we have in the health department, which is very acute. I can see that you have here a similar problem. It is somewhat similar, at least.

As an old businessman, when I had something to sell, I advertised that article. And if I wanted to buy something, I advertised to the effect that I wanted to buy a certain article. I think that goes in all lines of business, including yours.

Every college and university in America, I think with few exceptions, has a college paper, a newspaper. That newspaper is read religiously by the students. It seems to me that the best way to get this story to the colleges and to the students about this need for engineers of which you speak would be to write a statement which tells the story, and send it to every college and university in America. It might not be out of line to send it to the larger high schools, perhaps all of them, to get these boys to think about this thing and the great need.

Certainly this atomic problem is going to be a problem that will confront us for many, many years, and naturally we need young fellows coming up who will take an interest in it. The only way to get that is to explain it to them.

Dr. LIBBY. We will do that, Mr. Jensen.

Mr. JENSEN. I hope you will do that. You say you will do that?

Dr. LIBBY. Yes, sir.

Mr. JENSEN. I think that is very fine.

It may not be out of order to have people go to these colleges and make talks to the student body. I can see where we would be in a fine fix in possibly 10 or 15 years if we have a dearth of so-called nuclear engineers. I certainly would be in favor of sending a man around to the colleges.

Dr. LIBBY. I couldn't agree more.

Mr. JENSEN. I have one more thing. I cannot quite understand why you put an atomic pilot plant in Pittsburgh, for instance, where you have in the State of Pennsylvania a great supply of coal and now there are hundreds of thousands of coal miners out of a job. That is the situation in Pennsylvania.

Is it your plan to have an atomic generating plant there to generate atomic energy in competition with steam plants which burn coal? I am wondering if perhaps that should be put in some other place where you do not have such a plentiful supply of coal. What is your answer to that?

Dr. LIBBY. Do you want to answer that, General Fields?

Mr. FIELDS. I believe the answer to that is that in setting the project up and in considering where the talents were and where it might be done, that that controlled where that project went at that time. It was to get on with the installation of the first unit, and I believe that had more to do with it than any other consideration.

Mr. TAMMARO. One of the controlling factors, too, was the fact that the Government itself, or the Commission itself was going to have to build this pilot plant, and if we built it ourselves it was going to cost quite a bit of money. At that time it was roughly $100 million.

Well, we had to build a plant of this size to find out more about atomic energy in terms of power, instead of going to the pilot plant size of 15,000 kilowatts. This is 60,000 kilowatts. We did advertise all over the country, just as you mentioned about advertising, to find out who would give us the most money. We took all of the proposals and we added them all up, and we found that Duquesne came out with a reduction in the Government's costs of roughly $33 million in 5 years; the second best proposal was from a company in Pennsylvania also who reduced the Government's cost by $20 million in 5 years, and they came all of the way down to $5 million.

So what we took was the one which reduced the Government's cost the most. Cost was the controlling factor, the least cost to the Government.

Mr. JENSEN. Of course, it will take a lot of coal to fuel the generating plant, the steam plant to generate electricity which goes into your whole setup in your atomic power, the fissionable materials and all of that material. Maybe it will take just as much coal, and perhaps more, if you get going with this plant. Would there be anything of that kind?

Mr. TAMMARO. May I answer that question this way——

Mr. JENSEN. Pennsylvania is in a bad fix right now, with this great unemployment problem they have in the coalfields.

Mr. TAMMARO. Perhaps before I get through, Dr. Davis may take over, but I think I might answer the question this way: This power is going to be awfully expensive power, and it is not on-the-line power. It is merely dump power. We can give them a bucketful tomorrow, and two bucketfuls the next day. The big job there is for us to learn how to make competitive power, primarily, in running this reactor. So it is dump power, and as far as I am personally concerned I do not think it will make any difference in the coal-mining area.

Would you agree with that? It is purely experimental.

POWER REACTORS ACCELERATION PROGRAM

Mr. RABAUT. Let us now go to page 64. While it has been touched on by my colleague, I want to put it on the record with a reference to the program.

You have power reactor acceleration program for fiscal 1955, and you had nothing there. This year you are asking for $10 million.

Then down at the bottom of the sheet you say:

> For this purpose, the budget provides $50 million under the "Operating expense" appropriations, for obligations in 1956. It is estimated that costs to be incurred during 1956 will amount to $10 million, the balance being included in unpaid obligations at the end of fiscal year 1956.

Please enlarge upon this paragraph.

Mr. FIELDS. We are asking for $50 million in obligations, but our budget is on an accrued-cost basis, sir, and the costs are shown as they are accrued by fiscal year. We would make obligations during the year that would not have been paid.

Mr. MCCARTHY. On page 145, Mr. Chairman, we show the unliquidated obligations at the end of 1956. We show the changes in that item and reflect this $40 million.

Mr. RABAUT. Wait until I get that page, will you, please?

Mr. MCCARTHY. This is one of the adjusting items to cost. The last line there is the increase in our unliquidated obligations from the end of 1955 to the end of 1956. We estimate $58 million, of which the very top line shows the $40 million for the power acceleration program.

Our budget is made up in terms of our program costs, and those are the accruals during the year for labor, materials, and so forth. Then we show the changes in our inventories, working capital, and in our unpaid obligations. We then come back to total obligations to be incurred.

Mr. RABAUT. This is for 1956. How much are you going to have the camel's nose under the tent for 1957?

Mr. MCCARTHY. To the extent of $40 million which, if we do not cost it in 1957, will be costed in 1958, and possibly beyond.

Mr. RABAUT. I do not think in a budget of this size I ought to call it the camel's nose. I ought to call it the pimple on the camel's nose.

Mr. PHILLIPS. If you are bringing your construction budget later on, why do you have any of the power reactor program in here? Why do you have a power reactor acceleration program here, and then bring in a supplemental for the construction program?

Mr. RABAUT. Does this apply to the supplemental?

Mr. MCCARTHY. This is not construction. This is research and development costs in the laboratory, and certain assistance, chemical processing, and so forth.

Mr. RABAUT. Do you have any further comments on this reactor?

Mr. FIELDS. I do not believe so.

AIRCRAFT PROPULSION REACTOR PROGRAM

Mr. PHILLIPS. I have a question on page 67. I want to ask about the aircraft reactor program.

I see you want $37,900,000 for fabrication and testing of nuclear reactors, and I am quoting, "suitable for use in aircraft propulsion systems."

Mr. FIELDS. This is because of developments which have taken place in the last year, and perhaps we could outline them in a little more detail here. It is a new approach to the problem, sir.

Mr. RABAUT. I was going to ask one question for the record on that. Then we can go into an explanation off the record.

How much is the Air Force spending on the aircraft propulsion reactor program?

Mr. FIELDS. May I ask Dr. Davis to handle both of these questions, and I believe this would have to be off the record, sir.

Mr. RABAUT. Off the record, and we will discuss this item.

(Discussion off the record.)

Physical Research Program

Mr. Rabaut. What about the physical research program?

Mr. Fields. The next item would be the physical research program, which you will find on page 86.

Mr. Rabaut. We will put in the record pages 86 to 91, inclusive.

(P. 86 to 91 are as follows:)

Physical Research Program—Operating Costs

Program statement

Estimate fiscal year 1956	$45,720,000
Estimate fiscal year 1955	40,253,000
Increase	5,467,000

Physical research is carried on by the Atomic Energy Commission for the purpose of assuring the Government adequate scientific and technical accomplishment in the field of atomic energy. As progress is made the prospects for rewards from further investigations seem ever to multiply. In retrospect, every advance in atomic capability can be traced back to laboratory research of the type now carried on under this program. The aim is to develop and mobilize adequate scientific talent and facilities for work on the most urgent and promising problems of atomic energy under conditions where the more imaginative scientists have freedom for creative effort. About 70 percent of the program is carried on in the Commission's own laboratories. The remaining 30 percent is carried on principally in university laboratories where both research and training are accomplished in sciences related to atomic energy.

Following are the areas where increases are proposed in fiscal year 1956:

Area	Increase over fiscal year 1955 budget
Chemical properties and reactions	$1,431,000
Design and development of reactors and accelerators	1,281,000
Physical methods of isotope separation	530,000
Production, treatment and properties of materials, alloy theory, and nature of solids	517,000
High energy physics	405,000
Process chemistry	291,000
Nuclear structure and neutron physics	285,000
Classified project A	262,000
Other	465,000
Total	5,467,000

Summary of estimates by category

Category	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
1. Isotope distribution	$331,160	$335,000	$460,000
2. High energy physics	7,212,768	7,185,000	7,590,000
3. Nuclear structure and neutron physics	9,054,241	9,162,000	9,447,000
4. Extra-nuclear properties of matter	1,883,718	2,000,000	2,086,000
5. Design and development of reactors and accelerators	768,942	1,087,000	2,368,000
6. Physical methods of isotope separation	332,000	321,000	851,000
7. Process chemistry	4,428,670	4,413,000	4,704,000
8. Classified project A	513,346	768,000	1,030,000
9. Chemical properties and reactions	8,448,668	9,176,000	10,607,000
10. Chemical isotope separation studies	655,409	1,026,000	1,277,000
11. Production, treatment and properties of materials	3,002,557	2,937,000	3,203,000
12. Alloy theory and the nature of solids	715,289	765,000	1,016,000
13. Effects of irradiations on materials	1,036,660	878,000	881,000
14. University cooperation and training	228,996	200,000	200,000
Total, physical research program	[1] 38,612,424	[1] 40,253,000	45,720,000

[1] Excludes for comparability, $700,000 in fiscal year 1954 and $820,000 in fiscal year 1956 for a classified project budgeted in fiscal year 1956 under the reactor development program.

JUSTIFICATION OF CATEGORIES

1. Isotope distribution, $460,000

Radioisotopes and stable isotopes are produced for use in the Commission's program and are also made available to outside users. Radioisotopes are sold at established catalogue prices to users licensed by the Commission for use in industrial and medical applications and for research. Stable isotopes are prepared and distributed for use in nuclear, biological, and medical research. Electromagnetically separated stable isotopes are loaned with a $50 service charge. Stable isotopes obtained by diversion or as byproducts from other Commission activities are sold at established catalogue prices. The $70,000 increase in fiscal year 1956 for radioisotopes is to provide for development of processes for distributing short-lived, medically useful isotopes. These isotopes are now available only at hospitals located near a reactor. The $55,000 increase in fiscal year 1956 for stable isotopes is to continue the 168-hour workweek that was established in mid-fiscal year 1955 to double the former production so as to meet increased Commission requirements.

Details of the estimate are as follows:

	Fiscal year 1954	Fiscal year 1955	Fiscal year 1956
RADIOISOTOPES			
Production and process development	$1,520,675	$1,425,000	$1,495,000
Sales and transfers	(1,530,670)	(1,525,000)	(1,525,000)
Net cost, radioisotopes	(9,995)	(100,000)	(30,000)
STABLE ISOTOPES			
Production and process development	411,029	497,000	552,000
Sales and transfers	(69,874)	(62,000)	(62,000)
Net cost, stable isotopes	341,155	435,000	490,000
Net cost, isotope distribution	331,160	335,000	460,000

2. High-energy physics, $7,590,000

This is the study of nuclear and fundamental particle interactions at energies above the meson threshold. The research includes cosmic-ray studies and work with the large-particle accelerators. With the increased operation of the cosmotron and bevatron, about 17 percent of the funds for physical research will be committed to high-energy physics in fiscal year 1956.

The most fruitful source of new information about the interaction of fundamental particles and the nature of nuclear forces lies in high-energy nuclear experimentation. Much remains to be learned about the production and properties of mesons, about the interactions between mesons and nucleons, and about interactions between nuclei and nucleons. The basic laws of force governing the interaction of elementary particles, or groups of nucleons, are still not understood. The nature of these forces, which give rise to nuclear binding, constitutes the central problem in nuclear physics today. Studies in this high- and ultra-high-energy region continue to provide new information on the frontier of knowledge of nuclear forces and the nature of matter and is of direct interest to the Atomic Energy Commission.

The $405,000 increase in high-energy physics research for fiscal year 1956 is required to make more effective use of existing facilities such as the cosmotron and other accelerators.

3. Nuclear structure and neutron physics, $9,447,000

This is the study of nuclear processes at energies below the meson threshold. It includes studies of the atomic nuclei in their various energy states and their interactions and transmutations by neutrons and other nuclear particles. Such research develops data basic to the nuclear processes involved in the release of atomic energy. Most of this research involves the use of nuclear reactors or particle accelerators.

Because of the central relevance of this work to applications of atomic energy, and its importance for understanding nuclear structure, the level of support is to be increased in fiscal year 1956 by $285,000. The increased effort is to obtain

inelastic neutron-scattering data needed in the design of weapons, reactors, and radiation shields.

4. Extranuclear properties of matter, $2,086,000

This activity covers research in the field of physics of the solid, liquid, and gaseous states of matter; the extranuclear effects of neutrons, protons, electrons, and photons; low-temperature phenomena; magnetism; optical spectroscopy; and mathematics and computation.

During the past 2 years, a number of large, high speed, electronic computers have come into operation in the program of the Atomic Energy Commission. An expanded program of research and training in basic mathematics and numerical analysis and the training of coders and programers will lead to a more effective utilization of these modern facilities in the solution of our numerous problems. Additional research is also planned in shock phenomena and solid state physics. The $86,000 increase requested for fiscal year 1956 will provide for needed expansions of these projects.

5. Design and development of reactors and accelerators, $2,368,000

Particle accelerators and nuclear reactors are used for the production of radioactive isotopes, for studies of nuclear structure and nuclear properties, and for studying the nature of the interactions of the fundamental particles. Also, it is necessary to develop new techniques and new instrumentation as these devices push further and further beyond the frontier of existing knowledge. Accelerators and reactors with their associated experimental apparatus have important applications in the Commission's program.

Of the $1,281,000 increase requested in fiscal year 1956, $850,000 is required to continue at a reduced level on a research scale and with research motivation types of activity in the field of high-current accelerators previously budgeted and carried on under the reactor-development program. High-current accelerators will give investigators an opportunity to advance into new scientific areas and to explore new phenomena not now within our reach. Judging by past experience, the most important consequences of such an advance will not have been foreseen. The remainder of the increase, $431,000, is to carry out high-energy accelerator design studies and for analytical services, fabrication of specialized components, and such other assistance as the Commission will provide off-site research reactor projects.

6. Physical methods of isotope separation, $851,000

The narrative pertaining to this and the following categories through 13 is included in the classified portion of the justification material.

7. Process chemistry, $4,704,000

8. Classified project A, $1,030,000

9. Chemical properties and reactions, $10,607,000

10. Chemical isotope separation studies, $1,277,000

11. Production, treatment, and properties of materials, $3,203,000

12. Alloy theory and the nature of solids, $1,016,000

13. Effects of irradiation on materials, $881,000

14. University cooperation and training, $200,000

This activity comprises a group of educational and training functions performed for the Commission by the Oak Ridge Institute of Nuclear Studies. The objectives are to increase the number of scientific and technical personnel trained in the field of atomic energy, and to foster new research interest in nuclear and related sciences in southern colleges and universities in support of the Oak Ridge program. No changes are planned from the fiscal year 1955 budgeted level.

Mr. RABAUT. Do you want to tell us about this program?

Mr. FIELDS. Yes, sir. I think that I should touch briefly on that.

There is an increase requested of $5,467,000. To get specific on the principal increases, I think we would have to go off the record, but basically the program is to enable the Commission to expand research efforts in certain important areas.

There are still vast unknown areas in which we have to move forward. Perhaps the thing would be to talk about the increases here.

Mr. RABAUT. Tell us about the 30–70 percent relationship.

Mr. FIELDS. Seventy percent of the program is conducted in the Commission's own laboratories. That is in the National Laboratories such as the Argonne National Laboratory and the Brookhaven, or in the Radiation Laboratory at Berkeley.

Mr. RABAUT. And the remaining 30 percent?

Mr. FIELDS. That is by contracts with universities, both for research and pertaining to sciences relating to atomic energy.

Mr. RABAUT. What assurance have you that their work, costing roughly $16 million, has some bearing on your problems?

Mr. FIELDS. We do not go forward with any contracts with them unless it is an integral part of the objectives we have. It is either related to chemistry research or physical research which bears on problems of interest to us.

Mr. RABAUT. Have they been successful in the past?

Mr. FIELDS. Yes, sir, they have been quite successful.

Mr. RABAUT. How many grants and fellowships do you have at the present time?

Mr. FIELDS. We have none in the physical sciences here, sir. That is, in this physical-research program. Now let me see on the grants part. I will check.

I find that is right.

Mr. RABAUT. Are you planning any?

Mr. FIELDS. Not in the physical-research program.

Mr. RABAUT. Is there any money in the budget for it?

Mr. FIELDS. There is no money in the physical-research program for it. There is some money for fellowships in biology and medicine, but these are for training associated with our own work.

Mr. RABAUT. How much is that? Is that in a different department?

Mr. FIELDS. That is in a different department.

Mr. RABAUT. We will have to adjourn now until this afternoon at 1:30.

AFTERNOON SESSION

Mr. RABAUT. The committee will come to order.

We are now on the physical-research program.

GAO AUDIT REPORT ON AEC

Under this research program we will consider this report to the Committee on Appropriations of the House of Representatives of significant findings developed by the General Accounting Office during the course of audits and other examinations of the Atomic Energy Commission.

It says under its subheading, "Inequitable Overhead Contract Provision":

> In a contract with a university we believe that the method provided for computing the portion of the university's overhead chargeable to AEC is inequitable in the following respects:
>
> 1. The AEC payment for overhead includes part of the cost of the university library, and part of the cost of the purchasing, personnel, and accounting departments. The benefit that the AEC work receives from these departments is doubtful, since the university has established a separate unit to do the AEC work, and this unit has its own library and service departments.

That is the first paragraph.

The second paragraph says:

Another inequity concerns the bases used to apportion the overhead. The base on which AEC's portion of the overhead is computed includes the cost of the capital equipment purchased by AEC for its work; however, the basis on which the university's portion of the overhead is computed does not include the cost of the capital equipment owned by the university. It would seem that all the capital equipment located at the university should either be included in or excluded from the bases.

What about that?

Mr. FIELDS. I believe this is the contract with the University of California at Berkeley. We sat down recently with the university in an attempt to renegotiate the overhead clauses of the contracts concerned. We did achieve some of the recommendations here of the GAO in that there is to be a change in the charge for the libraries, and with respect to the base utilized here. I would like to ask the Controller if he would like to give you more specifics on that.

Mr. BURROWS. This contract goes back to the main contract with the University of California which we have had since the very early days. The contract has expanded a good deal since the earlier period. We have in fact brought under direct reimbursement a number of the services which a university would normally furnish through their indirect overhead, which we are now paying for directly. We have brought this to the attention of the university. The university feels that this is their standard method of allocating overhead, the method that they use for other agencies and other persons with whom they contract, and that to make a different arrangement with us might well cause a good deal of confusion in their system.

On this ground they are at the present time unwilling to make a change in the contract. This contract expires on June 30, 1956, and it is our hope to get some of these inequities, which we have been aware of and which we have been working on, corrected at that time.

There are two points mentioned there which we believe we will get the university to agree to, namely, the method of computing the library service, and second, the method of establishing the base for the divisional overhead.

Mr. RABAUT. You will note that any criticism here is from the General Accounting Office. I am just quoting from their report. That Office has taken cognizance of it, and I just want to read it into the record so you people will act accordingly.

Mr. FIELDS. Yes, sir.

Mr. RABAUT. Now you have something further to develop on page 86.

Mr. FIELDS. It is with respect to the physical program and I thought I should direct some remarks to the increases specifically. The total increase in $5.4 million, and of that $1.4 million is requested for increase in the level of chemical research in order to improve our knowledge of high temperature chemistry primarily. It is in the reactor field where we operate with extremely high temperatures and high intensities of neutrons and there is just a lack of knowlegde in that area. I should not say lack of knowledge, but a great deal to be learned. Five-tenths of a million of this is an increase for metallurgical research. This has to do with the study of corrosion resistant metals and alloys needed for reactors using high temperature water and so forth.

Four-tenths of a million of the increase is requested to augment studies at Argonne National Laboratory in Chicago, toward the possibility of constructing a multibillion volt accelerator for work in high energy physics.

If I could go off the record.

(Discussion off the record.)

Biology and Medicine Program

Mr. Fields. The next program would be the biology and medicine program on page 99 of the justification.

Mr. Rabaut. We will take up the biology and medicine program and insert in the record pages 99 to 109, inclusive, of the justification.

(The justification is as follows:)

Biology and Medicine Program—Operating Costs

Program statement

Estimate fiscal year 1956	$27,000,000
Estimate fiscal year 1955	27,000,000
Change	0

The operating program in biology and medicine attains in fiscal year 1956 a stabilized level of operations, and the budget request is held to the proposed fiscal year 1955 program level.

There is no diminution of Commission responsibility for the health and protection of individuals engaged in atomic energy activities and of the general populace in these matters. On the contrary, with the expansion of production programs, the development of thermonuclear devices, and the rapidly increasing interest in commercial utilization of atomic energy, the need to keep not just abreast, but ahead of the needs in this field of biomedical research is imperative.

Barring unforseen developments, it is felt that the requested budget will progressively extend the present program, most effectively utilizing the highly specialized and competent staffs assembled at the Commission's biological and medical research laboratories, and continue the program of supporting biomedical research in matters of intimate interest to the program at many universities throughout the country.

The need for knowledge in this field is great, and the program continues to pursue these ends, adjusted to meet the immediate needs as they arise. The basic elements of the research and the changes in trends are outlined in more detail in the following material.

Summary of estimates by category

Category	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
1. Radiation effects on biological systems	$8,457,503	$8,937,000	$9,020,000
2. Combating radiation detrimental effects	3,228,672	3,287,000	3,431,000
3. Beneficial applications of atomic energy	6,512,962	7,241,000	7,292,000
4. Biomedical problems in atomic-energy operations	5,326,370	5,849,000	5,688,000
5. Radiation equipment	978,014	1,200,000	1,024,000
6. Vocational and special training	433,090	486,000	545,000
Total biology and medicine program costs	24,936,611	27,000,000	27,000,000

JUSTIFICATION OF CATEGORIES

1. Radiation effects on biological systems, $9,020,000

The basic radiobiological research program seeks to evaluate the alterations in living things, or parts thereof, brought about by exposure to all types of radiation, and to elucidate the mechanism of such alterations in terms of the basic physical and chemical processes that are modified. Both at the AEC installations and

under offsite contracts, the reactions to irradiation of a wide variety of specific physiological and biochemical processes and anatomical systems are under extensive study.

(a) *Cancer research: Fiscal year 1955, $300,000: fiscal year 1956, $310,000.*—Cancer is not an uncommon result of overexposure to radiation; on the other hand, it is a disease which is susceptible to treatment and study through the use of radiation. Hence, while some Commission studies on radiation effects unavoidably deal with the cancer program, this subject is, in the main a principal objective of our program to find beneficial applications of atomic energy. Therefore, for convenience, all of the effort in the biology and medicine program which is directed toward cancer is described under "Beneficial applications of atomic energy," item "Cancer research" which appears on page 102.

(b) *Medical research: Fiscal year 1955, $3,500,000: fiscal year 1956, $3,520,000.*—The continuing problems in medical research which are expected to be especially emphasized in fiscal year 1956 include the following:

(1) Damage to the blood-forming system—interference with the function of enzymatic reactions involved in the synthesis of the essential molecules of the blood cells, and the release of new cells into the circulation.

(2) Damage to the blood-clotting system—defects in the function of substances in the blood platelets and plasma concerned in the clotting process, and increasing susceptibility to leakage in the walls of the blood vessels.

(3) Damage to the infection-combating systems—activation of latent infections, breakdown of normal barriers to movement within the body of infectious organisms, and decreased activity in the cells and the immunological reactions which normally dispose of invading organisms.

(4) Damage to the mechanics of general maintenance of normal body chemistry—disturbances in the balance between rates of various hormonal and enzymic activities and energy-transferring reactions, leading to abnormal distribution and concentration of the basic salts, foodstuffs, end-products, and cell building blocks.

(5) Damage to the mental faculties—alterations in learning capacity, memory, emotional and mental performance, especially in the subhuman primates.

The long-range program in Japan on the biological and medical effects of the atomic bomb on man will continue into its 11th year in fiscal year 1956, with decreasing emphasis on the genetic surveys offset by more intensive work in the medical and surgical pathology programs.

(c) *Biological research: Fiscal year 1955, $4,973,000; fiscal year 1956, $4,970,000.*—The Commission is continuing its extensive studies of genetic and somatic effects of radiation of all kinds on plants and animals. One of the large problems is to find out exactly how serious is the radiation hazard to genetic systems; another is to find ways of using radiation induced genetic mutations for improvements in crops of cultivated plants and in domestic animals.

Past studies on plants and animals have firmly established that the harmful effects from atomic detonations, X-rays, and radioactive substances are not only the result of immediate direct action but are also due to a series of long-term physiological changes. To understand radiation injuries to man a large number of fundamental studies will be devoted to analyzing these changes in animal and plant tissues under carefully controlled laboratory conditions and at atomic test sites. The studies include the effects of radiation on length of life, growth rate, and metabolism. These studies provide the basis for developing methods for combating the deleterious effects of radiation.

(d) *Biophysics research: Fiscal year 1955, $164,000; fiscal year 1956, $220,000.*—The basic radiobiology program will be continued at approximately the same level through 1956. It is anticipated that some of the recently developed theories regarding the interaction of radiation with tissue components will be tested experimentally.

A knowledge of the initial physical events occurring when radiation is absorbed by biological molecules is essential to our understanding of the observed effects on whole cells, tissues, and organisms. Studies are underway to determine how radiations alter the tissue water molecules and how these altered molecules affect surrounding proteins and other tissue components and cells. Other studies are underway on important biological molecules and micro-organisms such as enzymes, viruses, and bacteria to determine their inactivation or change in infectivity as the result of exposure to radiation. A greater increase in research effort in this program is desirable, but a shortage of scientific personnel trained to contribute to the solution of these highly complex problems exists.

2. Combating radiation detrimental effects, $3,431,000

This program is aimed at development of protective and corrective measures which may be used to combat detrimental effects of radiation in man and economically important animals. A number of agents and procedures have proved to be effective in reducing radiobiological responses, if administered prior to the exposure, but in general these are all rather extreme measures and must be critically timed in relation to the radiation exposure. More effective practical measures must be developed if possible.

(a) *Medical research: Fiscal year 1955, $1,525,000; fiscal year 1956, $1,550,000.*—It is anticipated that the fiscal year 1956 effort will reflect declining interest in search for new prophylactic agents, in favor of studies on the mechanism of action of proved agents.

The greater effort will continue to be toward post-exposure corrective rather than preventive measures; these studies are conveniently grouped into three classes:

(1) Replacement measures—in fiscal year 1956 particular emphasis is planned on efforts to separate, purify, and characterize the potent recovery factor(s) in spleen, bone marrow, and other organs, and the antihemmorrhagic factors in blood platelets.

(2) Supportive measures—evaluation will continue of various regimes for control of infection, shock, fluid and electrolyte equilibrium, aimed at relief of complicating stresses hampering natural recovery processes.

(3) Mobilization of internally deposited radioisotopes—study of the movements within the body, and excretion, of inhaled or ingested radioelements with poorly understood metabolism will continue as a major Commission responsibility; in fiscal year 1956 increasing emphasis on the rare earths is anticipated.

(b) *Biological research: Fiscal year 1955, $1,442,000; fiscal year 1956, $1,441,000.*—Promising studies will be continued, in the treatment of radiation injury in experimental animals by means of tissue extracts, blood and blood fractions, and certain chemicals. Another series of studies is concerned with agents which will aid in the elimination of radioactive substances which have entered the body through the lungs or digestive tract.

(c) *Biophysics research: Fiscal year 1955, $320,000; fiscal year 1956, $440,000.*—It is expected that the program on the personnel protection afforded by concrete, soil, water, and clothing against ionizing radiation will be continued at the same level through 1956. Increased concern over the health hazards of scattered radiation from high energy accelerators and new teletherapy machines will result in more research efforts to determine effectiveness of present shielding design on these facilities. Theoretical studies aimed at ascertaining the secondary radiations emitted by shielding materials will be continued at approximately the present level.

3. Beneficial applications of atomic energy, $7,292,000

The chief atomic energy byproduct application in general biomedical research is the use of radioisotopes as tracers in following the molecular transformations and movements within living organisms. In the last few years, these applications have grown so variegated and widespread that Commission support in this area is gradually being restricted to either unusual or untested procedures, or problems having other bearing on Commission objectives. Notable among the fields relating to the Commission's special problems, analysis of which continues to rest largely on isotopic techniques are studies of biochemical syntheses in living plant and animal cells, the functions of trace metals in vital processes, the physiology of bone deposition and turnover, and the chemical interplay between soils and plants. This program includes also the use of radioisotopes as sources of ionizing radiations for beneficial purposes, special uses of nonradioactive isotopes, and development and exploration of special uses of high-energy radiation sources in the solution of biomedical problems.

(a) *Cancer research: Fiscal year 1955, $2,176,000; fiscal year 1956, $2,206,000.*—There are essentially three aspects to the present developments of beneficial applications of atomic energy and its byproducts to the cancer problem. These are:

(1) tracing with radioactive isotopes the ways in which the vital processes of cancerous tissue differ from those of normal tissue, and the mutual interplay between normal and cancer tissues in the organism;

(2) localization of cancerous growths with radioisotopes, permitting more ready diagnosis and assisting in the planning of surgery or radiation therapy;

(3) treatment of cancers by atomic energy processes or byproducts; this includes evaluation of:

(*a*) external irradiation from radioisotopes;

(*b*) selective irradiation from locally deposited internal radio isotopes;

(*c*) neutron-capture by localized special stable isotopes, with resultant irradiation from locally induced radioactivity;

(*d*) special radiation sources available at AEC installations.

As particular applications along these lines become better evaluated, and thus either generally established or abandoned, the Commission's responsibility diminishes. At the present stage of the program, the few completed developments are more than offset by initiation of new efforts, and extension of active clinical research projects.

(*b*) *Medical research: Fiscal year 1955, $2,500,000; fiscal year 1956, $2,519,000.*—The bulk of this effort is in the radioisotopic tracer work discussed under the general heading above. The Commission is also actively developing the use of isotopes in diagnosis and characterization of disease states such as the anemias, renal and vascular disturbances, and various endocrine disorders. These methods are proving uniquely suited to analysis of movements of water and the chief body ions between the circulation, the intercellular spaces, and the cells and their disturbances resulting in diseases, which have hitherto been largely speculative.

(*c*) *Biological research: Fiscal year 1955, $2,215,000; fiscal year 1956, $2,217,000.*—Radioactive isotopes are used as tracers to investigate mechanisms by which animals and plants carry out their vital processes. Knowledge of such mechanisms is proving valuable from both a basic and practical consideration. The metabolism of mineral elements under both normal and abnormal conditions is a principal field of investigation.

(*d*) *Biophysics research: Fiscal year 1955, $50,000; fiscal year 1956, $50,000.*—Radioactive isotopes originating from bomb debris or from on-site reactors are used in elucidating the transport of particulate matter in the atmosphere, in oceans, and in ground water. Some promise is indicated in using radioisotopes to study other weather and geophysical phenomena such as jet streams, rain and hail nucleation.

(*e*) *Distribution of isotopes for cancer research: Fiscal year 1955, $300,000: fiscal year 1956, $300,000.*—The distribution of isotopes for cancer research program was instituted in 1948; in 1953 the policy of charging the customer 20 percent of the cost was adopted. The demand in millicuries thereupon decreased, although the total number of shipments in that year was considerably higher than in fiscal year 1952. The change reflected more efficient use of the material, and the more accurate estimation, with experience, of the amounts of isotopes necessary for therapy. The estimate for fiscal year 1956 reflects the anticipated demand if the program continues unchanged.

4. Biomedical problems in atomic energy operations, $5,688,000.—This program is concerned with the special health problems which may arise in the Commission's on-site laboratories, and in development, production, or testing of atomic weapons, fuels, and reactors.

(*a*) *Medical research: Fiscal year 1955, $725,000: fiscal year 1956, $725,000.* There are basically two types of medical problems, exclusive of the effects of ionizing radiation, which arise from atomic-energy operations:

(1) the effects of thermal, blast, and displacement forces accompanying the detonation of nuclear weapons;

(2) the toxicity of nonradioactive materials specifically encountered in atomic energy development, production, and testing activities.

The Commission conducts only a limited research program on the medical aspects of burns and blast hazards, since these biological disturbances differ qualitatively little from those posed by conventional explosions. The emphasis in the toxicology programs has been shifting with the demands as they arise; in fiscal year 1956, it is anticipated that the University of Rochester will continue as the major center of our effort in this area, with evaluation, under different conditions of exposure, of such hazards as beryllium, fluorides, thorium, uranium, and zirconium.

(*b*) *Biological research: Fiscal year 1955, $1,817,000; fiscal year 1956, $1,822,000.*—The fate of the particulate material from atomic detonations is being investigated by the Commission. Studies are being conducted that will enable this prediction of the potential hazards involved when the radioactive elements in the fallout are taken up by plants and enter into the food chain of man. The process by which these elements enter the plants is the objective of intense investigation.

(c) *Biophysics research: Fiscal year 1955, $3,307,000; fiscal year 1956, $3,141,000.*—The production facilities and on-site laboratories are constantly faced with the health problems of radioactive wastes. It is anticipated that the production and use of radioisotopes by Government and non-Government personnel will be intensified, creating some new and unexpected health hazard problems in the disposal of wastes. Improved procedures and techniques for the disposal of radioactive waste products and the monitoring of AEC on-site personnel and surrounding civilian populations, vegetation, and animal life are needed and emphasis will be placed on continuous monitoring of production areas and their environs using telemetering techniques.

Similar problems on a much broader scale are met in the Commission's weapons testing program. Highly specialized problems of dosimetry and monitoring arise from the necessity of tracking the radioactive cloud and measuring fallout. It is anticipated that in the future, emphasis will be placed on improving procedures for measuring the extent and type of fallout within a few hundred miles of ground zero. Some changes and improvements in analyses of fallout will be made without significantly increasing the man-hour effort. The overall consideration of atomic weapon effects will include studies of possible changes in climate and certain weather phenomena as the result of debris thrown up by atomic weapons.

An important mission of the Biophysics Branch is to determine the permissible levels of exposure to radiation for AEC on-site personnel and for persons off site. As the result of intensive laboratory experimentation with animals and the analyses of available human data the problems associated with external radiation and internal ingestion of radioisotopes is fairly well known. With weapons testing the problem of pinpointing the hazards to certain radioisotopes is more complex. Recent evidence indicates that iodine 131 may be one of the very important radioisotopes emanating from our weapons testing program.

5. Radiation equipment, $1,024,000

(a) *Dosimetry and instrumentation: Fiscal year 1955, $1,200,000; fiscal year 1956, $1,024,000.*—The physical measurement program is broadly divided into three parts:

(1) investigation of the limits and validity of the fundamental principles and assumptions that are involved in the interpretation of data obtained with the use of various analytical procedures and instrumentation;

(2) development of equipment and instrumentation designed for a certain purpose or research project and of specific rather than general interest. Often unique instruments of general applicability evolve from these investigations;

(3) development and construction of improved designs and modifications of existing instruments for which the basic principles and designs are well known.

Development of dosimetric techniques for measuring the entire spectrum of radiation emanating from atomic detonation is a part of the program. Equipment and projects for study of blast, and measurement of temperatures at various distances from detonation and evaluation of shielding and shelters for the protection of personnel is included here.

Projects for improving dosimetry of radioisotopes in tissue, vegetation, soils, and water are also a part of this program.

Increased emphasis in 1956 will be placed on studies aimed at testing over wide radiant energy range the validity of basic theories and principles on which much of our modern nuclear instruments are based.

Efforts will be continued to design unique instruments that will measure absolute dose received by tissues whether incident radiation is monoenergetic or a mixture of radiations with a wide spectrum of energies.

6. Vocational and special training, $545,000

(a) *Vocational training program: Fiscal year 1955, $258,000; fiscal year 1956, $317,000.*—The objective of the program is to alleviate the shortage of personnel trained and experienced in specific biomedical areas of technical and scientific knowledge. Vocational training fellowships are awarded to graduates of outstanding educational background, and the planned program is tabulated below:

	Fiscal year 1955		Fiscal year 1956	
	Number	Amount	Number	Amount
Radiological physics	60	$165,000	80	$224,000
Industrial hygiene	6	30,000	6	30,000
Industrial medicine	8	63,000	8	63,000
Total	74	258,000	94	317,000

(b) *Special training program: Fiscal year 1955, $228,000; fiscal year 1956, $228,000.*—Educational and training services are made available in radioisotope techniques, and radiological physics, including graduate student courses and research participation. These activities are mainly conducted at Oak Ridge, Brookhaven National Laboratory, and the University of Rochester, and will continue in fiscal year 1956 at approximately present levels.

RELATIONSHIP WITH OTHER GOVERNMENT AGENCIES

Mr. RABAUT. What other agencies of the Government receiving appropriations are in any way concerned with this program? What are your relations with the Public Health Service and the Veterans' Administration?

Mr. FIELDS. I would like to have Dr. Bugher, who is the Director of the Division of Biology and Medicine, speak to that.

Mr. RABAUT. Very well. Will you come forward, please, Dr. Bugher.

Dr. BUGHER. As far as this program is concerned, we have quite extensive relationships with the Department of Agriculture, with the Weather Bureau, and with the Department of Defense. From the standpoint of other agencies and departments of the Government that are doing research in the same broad area of knowledge, we have extensive connections with the United States Public Health Service and with the National Institutes of Health organization.

From the standpoint of research, the relationships with the Veterans' Administration are very minor, that is, we do not have joint programs with the Veterans' Administration.

With respect to the first group, the Weather Bureau joins with us in research having to do with meteorology phenomena which have connection with the problems of fallout from nuclear tests. Some of their work we finance. Some of it they undertake themselves. They have given very substantial assistance to the Commission in that area.

The Department of Agriculture has a very great interest in the applications of atomic energy to problems of agricultural production.

We have this concept in our relationship with them. In the field of fundamental biology or radiobiology, the Atomic Energy Commission's research program carries a problem in its fundamental aspects up to a point where it may have some agricultural application. At that point it becomes, as far as we are concerned, a matter of primary interest to the Department of Agriculture. We do not therefore in either group attempt to do the same thing at both places.

CANCER RESEARCH

In the general field of public health, we have a great deal of common interest with the Public Health Service and the National Institutes of Health, and that is particularly true in the area of industrial medicine,

and in the field of cancer research. The AEC cancer program is a distinctly specialized one in this sense. In the AEC program we have an industrial concern for various substances and situations which are known to be hazardous from the standpoint of the causation of cancer. We therefore have primary interest in research into the relationship of those substances to human cancer.

The other side of the AEC cancer program has to do with the fact that the Commission has special equipment, special facilities, and special scientific capabilities that no other agency or organization has, which can be brought to bear on the problems of the treatment of cancer. So that we have in the whole cancer field, as supported by the Federal Government, a special area which is made the special concern of the Atomic Energy Commission; the use of reactors, for example, in the treatment of cancer.

The development of new accelerators which depend on the Commission's special resources in physical research; the separation of special isotopes which can only be done in Commission facilities and exploration of those for the treatment of cancer are examples of that type of thing.

In order to make this thing work without conflict and without a lot of waste motion, we do consult with these other agencies very frequently and almost constantly. As an example, we are represented on the National Research Council's Committee on Growth, which has to do with the handling of the American Cancer Society grants. We sit in at the meetings of the National Cancer Advisory Council, which guides the National Cancer Institute, and its work.

So at every point we do know what they are doing and they in turn are familiar with the AEC program.

Mr. RABAUT. This is a formidable sum. I notice the appropriation for 1955 was $27 million, and the estimate for 1956 is the same amount.

How much money do you have as of any given date remaining in this fund?

Mr. FIELDS. I have the amount expended in 1955 as of the end of March, and we can give this to you right now.

Mr. MCCARTHY. On the biology and medicine program at the end of March, the accumulated costs were $19.8 million, Mr. Chairman. The balance would project out for the last 3 months at about $2.4 million a month.

Mr. RABAUT. I realize that there may be some individual conditions in a laboratory or an institution such as we are considering here, and its relationship to cancer, but would it not seem more logical to have all this money over with the Health, Education, and Welfare Department or with the National Institutes of Health?

Dr. BUGHER. We cooperate with them, and they are quite aware of this program and we with theirs. But the main point is that the bulk of this cancer work is conducted in four centers which pertain to the Commission and which depend upon the existence of the other Commission facilities.

For example, at Brookhaven, where the medical program includes more than cancer research, it is there simply because there is where we have the reactor, there is where we have the physicists and the radiochemists who make it possible. Such facilities do not exist elsewhere.

Mr. RABAUT. How much of a staff do you have?
Dr. BUGHER. Altogether you mean?
Mr. RABAUT. Yes, how many doctors are at Brookhaven?
Dr. BUGHER. There are 36 at the present time.
Mr. RABAUT. Do you have any cases there?
Dr. BUGHER. Yes.
Mr. RABAUT. How large is the hospital?
Dr. BUGHER. That hospital has potentially 36 beds, but they have been only able to operate 22. Those patients are drawn from the medical centers of the northeastern part of the United States as research patients. They are not there for routine treatment.
Mr. RABAUT. Have you had any progress there?
Dr. BUGHER. Yes, the outstanding development I think at Brookhaven has been the exploration of the possibility of incorporating within the cell of a tumor in the individual the isotope of boron, which reacts with neutrons. That is the boron of mass 10. The patient is given boron 10 at the present time as borax intravenously. That material tends to selectively centralize in the tumor, and the tumor can be exposed to a neutron beam from a reactor. When a neutron meets one of the boron atoms inside of the tumor cell, there is an immediate splitting of that atom to release a very large amount of energy which may be sufficient to kill the tumor cell. It is a promising lead. It is not the full answer. Now we are encouraging them, as well as people in other places, to develop new compounds of boron which will be less toxic and less difficult to handle. It does constitute one of the most promising of the new lines of treatment of cancer that we have.
Mr. RABAUT. I understand that at Brookhaven they have treated terminal cases and they have been cured, or the disease arrested to the extent that in one case a man took a trip to Europe.
Dr. BUGHER. Not on Government funds.
Mr. RABAUT. He was cured to the point where he could do it.
Dr. BUGHER. Yes, sir. I do not want to misrepresent the present status of this treatment. They were cases which had no other line on which to go. They had reached the end of the possibilities. There have been no permanent cures. Most of these patients have been substantially improved. Twenty were treated altogether. Some of them have been able to go back to work for a fairly good period after they had arrived at the point of apparent incipient death.
Mr. RABAUT. I am somewhat of an amateur about anything like this. While I have a devotion to a great humanitarian cause, I can honestly say that there are two men on the committee who are proficient on this subject. I would like to yield to my friend, John Fogarty, because I would like him to ask a few questions about this subject.
Mr. FOGARTY. Doctor, I have asked the Cancer Institute for the past 9 years every time they appear before our committee what duplication there is between your Commission and the Cancer Institute and they have given me practically the same answer that you have given this committee, that you do sit in with each other and you know what is going on, and you also have close contact with the American Cancer Society and their research council. So I don't see that there is much duplication. If there was, it probably wouldn't do much harm in this particular field.

How much are you expending on cancer research?

Dr. BUGHER. In this budget it is two and eight-tenths-odd-million dollars.

Mr. FOGARTY. Is that for basic research, or is some of that applied research?

Dr. BUGHER. Here you would have to call it basic research because, although it is research in the nature of cancer using the atomic energy tools, it is also research in the treatment of cancer. It does not include, however, any funds for the routine treatment of cancer patients, nor does it include any project for the routine diagnosis. But it does contain research funds for the development of new methods of diagnosis. That is the difference between some of the interests in other groups who have to face the problem of what do you do with a large number of cancer patients. The program here involves four hospital groups.

Mr. FOGARTY. What are those hospitals?

Dr. BUGHER. One at Brookhaven, the new one at Argonne Cancer Research Hospital in Chicago, a small hospital at Oak Ridge, which is run by the Oak Ridge Institute of Nuclear Studies, and the one in San Francisco, which is really a project in the University of California Medical School.

Each of these groups has its line of emphasis. The Brookhaven group in the cancer field is especially concerned with the neutron capture technique that I mentioned.

Mr. FOGARTY. How successful is that up to this point? You mentioned that someone had been cured well enough to take a trip to Europe. How long has he been cured from the point of view of years?

Dr. BUGHER. There I think we would have to say these results have been palliative. People have been made comfortable.

Mr. FOGARTY. Have you anybody in that hospital that has been cured 5 years?

Dr. BUGHER. No. These were all brain tumor cases and none of them has as yet gone that far. It is an exploration. I am quite sure that the present method of introducing the boron is not going to be the ultimately satisfactory one, but it is promising and it will have its use.

Mr. FOGARTY. In the beginning you had a great deal of trouble controlling that process, did you not?

Dr. BUGHER. It is still troublesome.

Mr. FOGARTY. Sometimes you don't know whether it is going too deep or not deep enough.

Dr. BUGHER. Yes; that is one thing that made it slow up the program and made it necessary to go back and do a lot more animal work. Even as yet the pickup of the material by the tumor with relation to its concentration of the same material in the normal tissue is subject to considerable improvement, and we have three separate projects going at universities directed at the synthesis of new organic compounds containing boron, hoping that some group of these will turn out something better than anything we have now.

Mr. FOGARTY. You speak of doing more research with animals and normal tissue. Have you had any experience with the germ-free colony they have at Notre Dame?

Dr. BUGHER. Yes; we supported a part of a program there for several years having to do with germ-free rats and their response to radiation.

Mr. FOGARTY. As I understand it, this is the only place in the world where germ-free animals of 2 or 3 generations have been raised?

Dr. BUGHER. So far as I know it is the only place that has succeeded in doing this.

Mr. FOGARTY. I have been told the program was tried in Sweden some years ago and after a few years the strain was destroyed by some germ or disease, and they did not try again. I know it is quite expensive. I thought you people had used some of these germ-free animals in some of your other research developments.

Dr. BUGHER. We were particularly trying to find out what, if any, effect on the susceptibility to radiation, the presence of the normal bacterial flora in the normal animal might have. That was a particular piece of research that they were doing for us.

Mr. FOGARTY. Did that particular piece of research work out all right for you or did you find out what you were looking for?

Dr. BUGHER. Yes. There was a difference in the radiation response of the germ-free animals from those that contained normal bacterial flora, that is, the normal animal. There seemed to be some slightly less sensitivity to radiation on the part of the germ-free animal.

Mr. FOGARTY. Are you cooperating in any way with the Institute now?

Dr. BUGHER. At the present time; no.

Mr. FOGARTY. Are you giving any grants of any kind to it?

Dr. BUGHER. Not this year.

Mr. FOGARTY. Do you think it is a worthwhile thing?

Dr. BUGHER. It terminated last year. Yes; I think it is a worthwhile idea. I followed the history of it quite closely, and it has been particularly valuable in the study of some of the fundamental problems of infection and the formation of antibodies. It has been helpful to the atomic-energy program from the standpoint of radiobiology. We have not felt that the level of support which we were giving should be much greater than what it was.

Mr. FOGARTY. I understand the Navy Department and the Army use that quite extensively.

Dr. BUGHER. The Office of Naval Research particularly has been very much interested in it.

Mr. FOGARTY. I understand Walter Reed Hospital, and I know the Public Health Service, is getting interested now in attempting to raise some of these germ-free animals.

Dr. BUGHER. That is correct.

Mr. FOGARTY. I was thinking that since this is a well-established institute that it might be better to subsidize that to a certain extent in order to hold it rather than to try to raise a strain of germ-free animals in 4 or 5 governmental agencies.

Dr. BUGHER. Are you asking for my opinion on it?

Mr. FOGARTY. Yes.

Dr. BUGHER. That is my own personal opinion, too, because it is an extremely highly specialized technical procedure. The only people who have that competence are the ones in the present project.

Mr. FOGARTY. It is an extremely difficult thing to raise a germ-free animal.

Dr. BUGHER. It is one of the most difficult things.

Mr. FOGARTY. I had never heard about it until about 7 or 8 months ago. I understand last week there was a meeting out there of some of the outstanding biologists and also men who were attending that meeting from various governmental agencies. I don't know whether you had anybody out there or not.

Dr. BUGHER. We were unable to join in that.

Mr. FOGARTY. Their report was unanimous this past week that it should be continued, even though it is an expensive project at this time. Do you agree with that?

Dr. BUGHER. I asked the Office of Naval Research to give me the synopsis of their findings so that we might study them, too, and I have not seen the results of that study, so I don't know what the recommendations are at firsthand.

Mr. FOGARTY. Do I understand that all you are spending is $2,206,000 out of the $27 million for research in cancer?

Dr. BUGHER. No, sir; that is one part of it. It is not all of it. It is in three parts of the budget here. The total comes to $2,816,500.

Mr. FOGARTY. That is the full amount?

Dr. BUGHER. Yes, sir.

Mr. FOGARTY. How is that divided up. Can you give us a quick rundown of how you use it?

Dr. BUGHER. Yes. If I may give the various items here.

Mr. FOGARTY. You do not have it all together on one page?

Mr. FIELDS. No; the principal amount is on page 104.

Mr. RABAUT. Those are all in the record.

Mr. FOGARTY. I would like to get that in one place as to the work you are doing on cancer and the universities or medical schools or laboratories that you are making grants to, and what they are working on.

Dr. BUGHER. I can give it in just a moment. All of this sum with the exception of $150,000 in 1 piece and $300,000 in another is expended in the 4 centers I mentioned. Brookhaven, the Argonne Cancer Research Hospital in Chicago, which is attached to the Billings Hospital unit, and operated by the University of Chicago, the third at Oak Ridge, the Oak Ridge Cancer Hospital, operated for us by the Oak Ridge Institute of Nuclear Studies, and the fourth in San Francisco.

As I mentioned the Brookhaven group are pushing especially in the line of neutron capture therapy. The group at Oak Ridge has its major concern in the development of mass isotope treatment procedures, and exploration of the use of isotopes in cancer. They, for example, have developed now the first cesium 137 unit of almost 2,000 curies. It is the first one in existence. A plant is being built there from funds appropriated over a year ago to turn out this product, which is one of the waste products, actually, but gives a gamma beam with no power supply, of course, and with a half life of 33 years. That is just one example of the sort of things the Oak Ridge group is doing.

At Chicago, in addition to research on the causation of cancer, they are exploring the use of accelerators and also the use of cobalt 60 in the treatment of cancer.

The group in San Francisco have a special mission, which is to look into the value of 70 million electron volt radiation from a betatron, especially constructed, and Dr. Robert Stone is engaged in that.

So each of these centers has a primary mission, although they will do other things related to that. There is a difference in emphasis at each place.

The $150,000 I mentioned goes to small research projects in universities other than these 4 main centers that I mentioned, and the $300,000 applies to a support of isotopes for research in cancer. The Commission has now changed that general concept to a similar support for isotopes for research purposes in biology and medicine of all kinds. Those are the three sources of the total sum I mentioned.

Mr. FOGARTY. Are you supporting medical research of other kinds in various universities and medical schools?

Dr. BUGHER. Yes, indeed.

Mr. FOGARTY. For instance, I noticed the University of California here in several places. How much are you supporting medical research of all kinds in the University of California?

Dr. BUGHER. That is found in 2 parts of the university, 1 at Berkeley and San Francisco and 1 at Los Angeles.

Mr. FOGARTY. What is the total amount at both places?

Dr. BUGHER. The Berkeley amount is $1,100,000.

Mr. FIELDS. Actually, at Berkeley the total in the biology and medicine program is $1,730,000, and for the University of California at Los Angeles, it is $1,040,000.

Dr. BUGHER. Yes. The difference here is that at UCLA the program is not primarily medical. That is, the purely medical part of it is $247,000. They are very actively engaged in problems associated with environmental sanitation, contamination, surveys in connection with the test operations, and a very broad program.

Mr. FOGARTY. You are supporting the University of California to the extent of $1,730,000 in this appropriation?

Mr. FIELDS. At Berkeley.

Mr. FOGARTY. What is the other one?

Mr. FIELDS. The University of California at Los Angeles, at $1,040,000.

Mr. FOGARTY. Then the total is $2,770,000, is that right?

Mr. FIELDS. Yes.

Mr. FOGARTY. Are there any other universities or laboratories that you are supporting to a greater extent than that?

Dr. BUGHER. We have a program at the University of Rochester.

Mr. FOGARTY. I presume that is the largest, the University of California?

Dr. BUGHER. That is the largest one.

Mr. FOGARTY. Start with the University of California and go right down the line, as to how much you are supporting these schools.

Dr. BUGHER. Yes; we have these here.

Mr. FOGARTY. Do you support them as far as building this specialized equipment they are using?

Dr. BUGHER. The project at the University of Rochester is in a building owned by the Commission or by the Government. All the equipment therein is so owned. It is a special AEC project on a university campus budgeted and supported entirely by AEC, and directed as to program in consultation with the university by the Commission.

The same is true of the project at Los Angeles. The one at Berkeley has some differences. Not all of the project is in AEC owned buildings.

Generally that is a different situation and a special situation from that obtaining in what we call the off-site research support in the universities.

The other unit I mentioned was the cancer hospital in Chicago, which is also owned by the Commission.

Mr. FOGARTY. Do you make any grants of any kind to the Memorial Hospital in New York?

Dr. BUGHER. If you will permit me to call them contracts, because under the enabling act we do not give grants. For the Memorial Hospital in New York—and the Sloan Kettering Institute complex—we have a quarter of a million dollars in a large project dealing with fundamental radiobiology, and then there is 1 other smaller project, as I recall, of about $12,000.

Mr. FOGARTY. What distinction do you make between a grant and a contract? We call them grants in the Public Health Service.

Dr. BUGHER. Yes. In the Biology and Medicine program many of the research contracts we speak of as grant-like. They have a similar intent. It is a contract which has much the same motivation and would not be treated differently if it were called a grant, presumably.

Mr. FOGARTY. Why do you insist it be called a contract?

Dr. BUGHER. Because that is the way we, by the Atomic Energy Act, do our business.

Mr. FOGARTY. Do they sign a contract?

Dr. BUGHER. Yes, the university signs a contract. It is negotiated. The terms of the agreement are those that are required by the Atomic Energy Act, together with the other administrative matters that follow.

Mr. FOGARTY. Will you put that in the record, then, the ways and means that you reach the contract with the Memorial Hospital and the Sloan-Kettering Institute?

Dr. BUGHER. Yes, I would be glad to.

Mr. FOGARTY. Also, what the contract is and on what basis it has been reached.

Dr. BUGHER. It has been operating for I think 5 years and does not, for example, include any equipment. The entire amount goes for salaries. As I recall, it includes no equipment and no overhead.

(The information referred to follows:)

The contract with the Sloan-Kettering Institute was entered into on July 1, 1950, and has been renewed annually since in support of a series of research projects under the heading of "Biological Effect of Radiation and Related Biochemical and Physical Studies." The research is concerned with various phases of radiobiology and the use of isotopic and other special techniques in the solution of biomedical problems and support is divided among the departments of biophysics, protein chemistry, immunochemistry, radiochemistry, and clinical investigations according to the Commission's interests in the research. Financial support of the project has been established at $250,000 per year.

The Institute submits progress reports semiannually on the work accomplished during the preceding period and at the conclusion of each contract year submits a renewal proposal describing the work which it proposes to pursue in the ensuing year and the estimated cost of such work. This renewal proposal is evaluated by the Commission's Division of Biology and Medicine in the light of past performance, extent of continued Commission interest, direction the research is taking, similar work supported elsewhere by the Commission, and availability of funds.

Mr. FOGARTY. Do you make any grants to the Children's Hospital in Boston?

Dr. BUGHER. Yes, we have one new one.

Mr. FOGARTY. As I understand it, that is the only children's cancer research hospital in the world, is that correct?

Dr. BUGHER. It is the only one in the United States.

Mr. FOGARTY. Do you make any grants to it?

Dr. BUGHER. As far as I recall, we have one for $55,000 which deals with the use of blood platelets in the treatment of leukemia and the hemorrhagic tendency that occurs.

Mr. FOGARTY. I understand that they have one child that they have kept alive in that hospital for 6 years which is the first time a child has lived that long with acute leukemia. Is that correct, or do you know of it?

Dr. BUGHER. I do know of the case.

Mr. FOGARTY. Four or five years ago the best medical brains in the country would tell the mother or father of a child with acute leukemia how long it had to live.

Dr. BUGHER. That is right.

Mr. FOGARTY. Now there is some hope to keep these children living for 3 or 4 or 5 years.

You mentioned a while ago that you are supporting some institute on the early diagnosis of cancer. Where is that?

Dr. BUGHER. That is one thing we keep stressing to all of these research centers.

Mr. FOGARTY. It is one of the most important, I would say, in the field of cancer.

Dr. BUGHER. We recognize that it is a field that has to be explored by everybody from every point of view. The biochemist naturally should be giving thought to it. Our groups we ask to push as hard as they can on any way in which radioactive materials, that is, isotopes, may be used to improve the diagnosis, either with respect to early diagnosis or more accurate diagnosis. The type of thing that is involved here is the use of isotopes as tracers to localize in particular regions where there may be a tumor and the improvement of the technology of detecting such concentrations.

One investigation of that type is going on at Massachusetts General Hospital in Boston, where elements which are positron emitters giving off positive electrons which almost immediately combine with a negative electron to give off gamma rays are being used to localize brain tumors. That seems to be working out reasonably well.

Mr. FOGARTY. Are you doing anything in the field of chemotherapy?

Dr. BUGHER. In only a very minor way. The Public Health Service really carries the primary interest and responsibility there.

Mr. FOGARTY. That is not very much as of now.

Dr. BUGHER. No. What we are engaging in is the use of radioactive carbon, radioactive hydrogen, tritium, in the synthesis of those compounds, so that they can be followed in the body and studied with respect to what happens to them. In other words, how the molecule is pulled apart eventually, and how it is excreted. I think at the moment that is the extent to which we are contributing to the chemotherapy problem.

Mr. FOGARTY. It is something new.

Dr. BUGHER. Yes, it is completely new.

Mr. FOGARTY. It has just been developed in the last year or two. Some of the cancer people tell me that they think they are ready to go ahead and do something in that particular field.

Dr. BUGHER. There are already substantial clinical results, but there is a lot of research which needs to be done on the types of compounds and how they may be synthesized.

Mr. FOGARTY. You have heard of this drug, krebyozin?

Dr. BUGHER. Yes.

Mr. FOGARTY. Are you supporting any research?

Dr. BUGHER. No, we have no research activity in that field.

Mr. FOGARTY. Do you know what it is?

Dr. BUGHER. I know what it is supposed to be, anyway.

Mr. FOGARTY. You don't know what it is made of?

Dr. BUGHER. No, I do not.

Mr. FOGARTY. Have you anything that you want to say about it? I don't want to put you on the spot or anything. It is a controversial question.

Mr. FIELDS. Maybe you want to say it off the record.

Dr. BUGHER. I would prefer it.

Mr. FOGARTY. Off the record.

(Discussion off the record.)

Mr. FOGARTY. Back on the record. I want to say you are doing a fine job in this field of medical research, Doctor, and I hope you will continue. I know eventually it is going to bring some results somewhere.

Dr. BUGHER. Thank you, sir.

Mr. JENSEN. The committee has just heard this very interesting colloquy between Congressman Fogarty and the doctor, which is an example of the great knowledge that our colleague, Mr. Fogarty, has in this field.

Mr. Fogarty is now the chairman, as you know, of the Health, Education and Welfare Subcommittee of the Committee on Appropriations. He has for many, many years been on that subcommittee, and has, it seems to me, dedicated his life to the cause of suffering humanity.

I have listened to Mr. Fogarty in colloquies of the nature we have just listened to, between him and the high officials and scientists of the Health Institute and I am always intrigued and overwhelmed by the knowledge that Congressman Fogarty has of this great and important problem.

I can say without fear of contradiction that Congressman Fogarty is the best informed man in this field in Congress by far, and I know you, Doctor, and your coworkers, will cooperate fully with Congressmen Fogarty in giving him all the information that you possibly can, because on him rests a great responsibility. He has accepted that responsibility like the great American he is, and is doing a wonderful job.

ATOMIC ENERGY RELATIONSHIP TO AGRICULTURE

I have been reading—this is an entirely different line—some statements about the development of isotopes so far as the production of agricultural crops is concerned. What is the story on that? Who cares to answer that?

Dr. BUGHER. I think there have been two major contributions of the atomic energy program to agriculture. One, and perhaps the most important one, has been that of radioactive isotopes for the study of the movement of substances in soils, for the movement into plants, for

the investigation into the physiology of a living plant and how it makes its product.

One of the best examples there is the development in the field of photosynthesis, the utilization of sunlight. In other words, the conversion of sunlight into carbohydrate of a chemical compound which is the beginning then of an organic series. Until we had particularly carbon 14 available, research in the field had come to a complete stop. It was up against a blank wall. In these few years I think more has been learned about the nature of that fundamental and extremely important reaction on which our life depends than in all of the previous years. It has been possible—in fact the program at Oak Ridge has succeeded in doing it—to carry on a certain amount of this type of utilization of sunlight outside of the living cell in a very small and tentative way. That has been an extremely important area.

Another area has been in the development of new plant forms through the application of radiation genetics, the use of gamma radiation and neutrons—either one or both—to accelerate the appearance of new characters in the plant line. That has given rise already to a number of new plant lines that are either more productive than the parent strain or more resistant to disease, and, in at least one instance, both things.

The result now is, for example, that many horticulturists from New England are sending in their material to Brookhaven National Laboratory to be radiated, and then the returns to the experiment stations from which it came. So we feel that this field of radiation genetics as applied to agriculture, because it has enormous possibilities in the improvement of crop plants at an accelerated rate, is very important.

Mr. JENSEN. To increase production.

Dr. BUGHER. Yes.

Mr. JENSEN. Thank you, Doctor. That is the information I wanted.

(Discussion off the record.)

FERTILIZER RESEARCH

Mr. PHILLIPS. On the record, if I may. Could you bring us up to date, Doctor, on the use of isotopes in the fertilizer research? One of the last evidences we had of the desirability and the profit which will accrue—I don't mean money profit, but profit in the use of the fertilizer—was in the tobacco area of the Carolinas, you will remember.

Dr. BUGHER. Yes.

Mr. PHILLIPS. I recall one fertilizer program has been completely changed because of the discovery that it was not getting to the plant. Of course, I think perhaps the chairman would be interested to hear what you are doing with this beetle in Texas. I think it is a dirty deal you are putting over on the beetle, I think it is highly immoral, but I think it would be very interesting to the committee.

Mr. RABAUT. Do you want the beetle on the record or off?

(Discussion off the record.)

Mr. PHILLIPS. Will you bring us up to date?

Dr. BUGHER. It is an experimental procedure with the beetle, if it works.

Mr. PHILLIPS. I cannot say its name.

Dr. BUGHER. The scientific name escapes me at the moment. The approach there is quite unique. Probably if it works there it has application in other areas, particularly in public health and epidemiology where we are dealing with insect vectors perhaps of disease. In this case the problem seemed to be to produce enough irradiated males that were made sterile by radiation but yet perfectly normal looking and behaving to fool the females and stop the production of the next generation. Most insect populations, probably all insect populations, depend for their survival on maintaining something above a minimal concentration of individuals. It has been well recognized to have an epidemic of yellow fever, it is not enough to have some mosquitoes of a species. You have to have above a certain level. In the case of these beetles, it may well be that if the population can be depressed below some critical level, it will go on out and disappear entirely. It is a very fundamental and very intriguing approach. It may not work. It is just ideas like that which change the course of scientific history.

Mr. RABAUT. Change the course of the world.

Dr. BUGHER. The fertilizer matter which Mr. Phillips is already familiar with is an example of the sort of thing that I was speaking of in regard to our relations with the Department of Agriculture. Once a method is evolved then it can be carried on practically by the agricultural institutes and experiment stations. By the use of radioactive phosphorous, particularly in fertilizers, but more recently other elements have been followed the same way, it has become possible to find out how much fertilizer is really necessary, and how it should be applied. Some crops need fertilizer application just on the surface, but another crop perhaps with deeper roots will have to have its material planted deeper or it won't get it. It is that type of research, most of which is carried on in this applied way by the Department of Agriculture, using the products of the atomic-energy program, that makes it possible to reduce substantially the cost of production of various crops.

COMMUNITY OPERATIONS

Mr. RABAUT. At this point, let us consider the community operations and insert in the record pages 110 to 115, inclusive, of the justification.

(The justification is as follows:)

COMMUNITY—OPERATING COSTS

Program statement

Estimate fiscal year 1956 (excess of revenue over expenses)	−$2,217,000
Estimate fiscal year 1955 (excess of revenue over expenses)	−2,098,000
Increase of revenue over expenses	−119,000

The community operations program provides for housing, commercial facilities, utilities, hospitals, and municipal facilities, and services in the AEC controlled and operated communities of Oak Ridge, Tenn.; Richland, Wash.; and Los Alamos, N. Mex. These operations are carried out principally through cost-type contracts. Commercial facilities are operated by private industry through lease or concession agreement. Housing and utilities are provided for project-connected employees at Sandia, N. Mex., and certain locations in the State of Colorado. Pending congressional action on an act to dispose of the Oak Ridge and Richland communities, the budget estimates for fiscal year 1956 are based on continued Federal ownership.

Summary

	Actual 1954	Estimate 1955	Estimate 19
Gross cost	$22,401,860	$22,814,445	$22,774,0
Revenue	−23,651,662	−24,912,445	−24,991,0
Net	−1,249,802	−2,098,000	−2,217,0

The last year in which a net Federal subsidy was needed to support the operation of AEC communities was fiscal year 1953. Since then, as shown by the summary above, revenues exceeded costs in fiscal year 1954 and are estimated to continue doing so on a rising trend through fiscal year 1955 and fiscal year 1956. Community population is expected to increase from 71,200 at the close of fiscal year 1954 to 73,500 in fiscal year 1956. However, increases in operating costs occasioned by this population increase will be more than offset by a combination of operating economies and increased revenues. Annual per capita costs are expected to drop from $314.63 in fiscal year 1954 to $309.85 in fiscal year 1956 while per capita revenues increase from $332.19 to $340.01 in the same period.

OAK RIDGE

Gross costs increase in fiscal year 1955 over fiscal year 1954, and subsequently decrease in fiscal year 1956 over fiscal year 1955. These changes are directly attributable to the changes in population. Revenues will be higher in fiscal year 1955 and fiscal year 1956 reflecting a greater usage of electricity for heating purposes, additional users of utilities and the full annual effect of water metering and of the rental increase established in fiscal year 1954. The Oak Ridge population was 32,000 in fiscal year 1954 and is expected to increase to 33,000 in fiscal year 1955 and then decrease to 32,500 in fiscal year 1956. The Oak Ridge community operations in fiscal year 1954 resulted in a net operating revenue of $308,869 and are projected at a net revenue of $990,000 in fiscal year 1955 and $1,024,000 in fiscal year 1956.

	1954 actual	1955 estimate	1956 estimate
1. Gross cost:			
(a) Municipal	$3,734,994	$3,884,000	$3,819,000
(b) Utilities	1,495,249	1,553,000	1,600,000
(c) Real-estate operations	2,719,737	2,561,000	2,561,000
(d) Hospital	1,230,445	1,320,000	1,293,000
(e) Property disposal	3,681	5,000	5,000
Total gross costs, Oak Ridge	9,184,106	9,323,000	9,278,000
2. Revenue:			
(a) Municipal	−413,049	−522,000	−535,000
(b) Utilities	−2,102,515	−2,208,000	−2,244,000
(c) Real-estate operations	−5,825,221	−6,402,000	−6,342,000
(d) Hospital	−1,152,190	−1,181,000	−1,181,000
Total revenue, Oak Ridge	−9,492,975	−10,313,000	−10,302,000
3. Net:			
(a) Municipal	3,321,945	3,362,000	3,284,000
(b) Utilities	−607,266	−655,000	−644,000
(c) Real-estate operations	−3,105,484	−3,841,000	−3,781,000
(d) Hospital	78,255	139,000	112,000
(e) Property disposal	3,681	5,000	5,000
Net, Oak Ridge	−308,869	−990,000	−1,024,000

RICHLAND

Gross costs for fiscal year 1955 and fiscal year 1956 reflect only minor increases since further economies in operation are expected to offset to a large extent anticipated cost increases resulting from General Electric salary increases, increased utility usage, provision of municipal services for a greater population, and increased maintenance costs of dormitories and housing. Revenues in fiscal year 1955 and fiscal year 1956 are expected to increase reflecting greater usage of utilities and the full annual effect of rent and telephone rate increases established in fiscal year 1954. The population of Richland was 26,500 in fiscal year 1954 and is expected to increase to 27,500 in fiscal year 1955 and to 28,000 in fiscal year 1956. The community operations at Richland resulted in a net operating revenue of $507,961 in fiscal year 1954 and are projected at a net revenue of $647,000 in fiscal year 1955 and $697,000 in fiscal year 1956.

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
1. Gross cost:			
(a) Municipal	$2,113,246	$2,157,000	$2,157,000
(b) Utilities	1,115,181	1,191,000	1,214,000
(c) Real estate operations	1,989,877	1,938,000	1,926,000
(d) Hospital	1,137,956	1,150,000	1,150,000
(e) Property disposal	16,351	65,000	65,000
Total gross costs, Richland	6,372,611	6,501,000	6,512,000
2. Revenue:			
(a) Municipal	−49,666	−103,000	−110,000
(b) Utilities	−1,712,235	−1,857,000	−1,900,000
(c) Real estate operations	−4,239,885	−4,285,000	−4,285,000
(d) Hospital	−878,786	−903,000	−914,000
Total revenue, Richland	−6,880,572	−7,148,000	−7,209,000
3. Net:			
(a) Municipal	2,063,580	2,054,000	2,047,000
(b) Utilities	−597,054	−666,000	−686,000
(c) Real estate operations	−2,250,008	−2,347,000	−2,359,000
(d) Hospital	259,170	247,000	236,000
(e) Property disposal	16,351	65,000	65,000
Net, Richland	−507,961	−647,000	−697,000

LOS ALAMOS

Los Alamos, N. Mex., exists to support the Los Alamos Scientific Laboratory; the town's requirements are directly related to the laboratory's mission of weapons research and development. Federal subsidies have declined steadily since fiscal year 1949, and since fiscal year 1952 operating revenue has exceeded related operating costs. This trend is expected to continue through fiscal years 1955 and 1956. Comparison of costs and revenues in fiscal year 1954 to those in fiscal years 1955 and 1956 reveal increases in both, with a greater net revenue. Major cost increases are budgeted for the schools due to a general teacher salary raise and a rising student enrollment, and for utilities. Major revenue increases are expected from utilities supplemented by smaller increases from miscellaneous real-estate activities and the hospital. The hospital subsidy is expected to be reduced by $45,000 from the fiscal year 1954 level. An overall increase in net revenue, or revenue exceeding cost, from $226,412 in fiscal year 1954 to $286,662 in fiscal year 1956, is budgeted. It is anticipated that the average town population, 12,700 in fiscal year 1954, will rise to 13,000 in fiscal year 1956, paralleling an expected increase in Los Alamos Scientific Laboratory employment over the same period.

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
1. Gross cost:			
(a) Municipal	$1,151,978	$1,224,307	$1,245,9
(b) Utilities	3,280,954	3,387,428	3,396,3
(c) Real estate operations	1,498,196	1,456,325	1,443,0
(d) Hospital	625,654	628,400	603,4
Total gross costs, Los Alamos	6,556,782	6,696,460	6,688,8
2. Revenue:			
(a) Municipal	−16,597	−14,650	−14,6
(b) Utilities	−3,666,475	−3,773,696	−3,802,4
(c) Real estate operations	−2,727,610	−2,763,285	−2,763,2
(d) Hospital	−372,314	−395,162	−395,1
Total revenue, Los Alamos	−6,782,996	−6,946,793	−6,975,4
3. Net:			
(a) Municipal	1,135,381	1,209,657	1,231,3
(b) Utilities	−385,521	−386,268	−406,0
(c) Real estate operations	−1,229,414	−1,306,960	−1,320,2
(d) Hospital	253,340	233,238	208,3
Net, Los Alamos	−226,214	−250,333	−286,6

SANDIA

Sandia, N. Mex., a small AEC community at the Sandia base in Albuquerque, is operated and maintained by the Sandia Corporation and supports the Commission's Sandia Laboratory. Operating revenues have exceeded costs since fiscal year 1948 and are expected to continue to do so in fiscal years 1955 and 1956. Revenues, slightly above the fiscal year 1954 level, are anticipated in fiscal years 1955 and 1956 as the result of rental and utility rate increases established in compliance with Public Law 547 and BOB Circular A–45. Increased age of housing units, however, indicates a need for increased real estate maintenance costs, reducing the net revenue in fiscal year 1956 slightly as compared to fiscal year 1955.

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
1. Gross cost:			
(a) Municipal	$64,850	$65,443	$68,3
(b) Utilities	38,329	38,664	38,6
(c) Real estate operations	152,044	151,278	158,9
Total gross costs, Sandia	255,223	255,385	265,9
2. Revenue:			
(a) Municipal	0	0	
(b) Utilities	−62,837	−65,328	−65,3
(c) Real estate operations	−369,592	−378,324	−378,3
Total revenue, Sandia	−432,429	−443,652	−443,6
3. Net:			
(a) Municipal	64,850	65,443	68,3
(b) Utilities	−24,508	−26,664	−26,6
(c) Real estate operations	−217,548	−227,046	−219,4
Net, Sandia	−177,206	−188,267	−177,7

GRAND JUNCTION

Financially self-sufficient housing is provided for contractor employees at the Uravan, Naturita, and Monticello processing plants and has proven an indispensable factor in maintaining an adequate, competent, and stable labor force for processing and production operations. A total of 145 housing units are involved, 49 at Naturita, 68 at Uravan, and 28 at Monticello. Operating costs will be higher in fiscal year 1955 because of necessary repairs and alterations to the Uravan and Naturita housing.

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
1. Gross cost: Real estate operations	$33,138	$38,600	$29,400
2. Revenue: Real estate operations	−62,690	−61,000	−61,000
3. Net: Real estate operations	−29,552	−22,400	−31,600

Mr. RABAUT. I would like to have you tell me something about this program.

Mr. FIELDS. There should be a revenue of $2,217,000.

Mr. RABAUT. You are looking forward to making that revenue?

Mr. FIELDS. Yes.

Mr. RABAUT. You actually made $2,098,000 in 1955?

Mr. FIELDS. Yes.

Mr. RABAUT. You are expecting to increase that by $119,000?

Mr. FIELDS. Yes, sir.

Mr. RABAUT. How are you getting along with the community operations? Are they paying?

Mr. FIELDS. Yes, sir. We have operated for the last 3 years without Government subsidy to these communities. As you see there, it has provided a net revenue to us. This is exclusive of amortization costs. These are the actual operating costs of these communities. They are for the housing and the commercial facilities, utilities, hospitals, municipal facilities, fire and police, and so on.

BUS LINES

Mr. RABAUT. Information comes to me that you are losing money on the bus lines. Is that right?

Mr. FIELDS. I think there is some expense on the bus lines, yes, sir.

Mr. RABAUT. What kind of rates do you charge?

Mr. FIELDS. It varies at the different installations. Do you have the specific rates, Mr. McCarthy? There are different problems in the bus lines between Hanford, Oak Ridge, and Los Alamos.

Mr. MCCARTHY. I don't have the rates with me.

Mr. RABAUT. Suppose you supply it for the record and give us some ideas of the mileages and things like that.

Mr. FIELDS. Yes.

(The information is as follows:)

Summary of AEC bus operations at Oak Ridge, Hanford, Los Alamos, and Idaho

Area and type of service	Number of buses in operation	Number of routes operated	Range in length of bus routes in miles	Fare charged per 1-way trip
Oak Ridge:				
Transportation of workers to plant.	38	7	9.7 to 13.9	30 cents.
Community service	13	7	4.2 to 10.3	15 cents or 2 tokens for 25 cents; schoolchildren 6½ cents per coupon or 10 cents cash.
Hanford:				
Transportation of workers to plant.	88	17	3.4 to 34.1	5 cents.
Community service	4	3	4.4 to 5.8	10 cents; schoolchildren, 5 cents.
Los Alamos:				
Transportation of workers to plant.	10	5	7.5 to 15.0	Nothing.
Community service		9	4.0 to 16.5	15 cents; schoolchildren, 5 cents.
Idaho: Transportation of workers to plant.	39	32	22.0 to 130.0	25 cents.

Mr. FIELDS. I think we have reduced the net cost of the bus operation over last year.

LOSSES BY CAFETERIAS

Mr. RABAUT. I understand that last year the only cafeterias that showed a profit were those operated by the concessionaires. Has anything been done to decrease the losses in the cafeterias that you operate?

Mr. FIELDS. We have decreased the losses somewhat last year and we have information on that that we can insert in the record.

(The information is as follows:)

CAFETERIAS

HIGHLIGHTS

1. The revised estimate of the net cost of cafeterias for production laboratory facilities for fiscal year 1955 is $614,000 which is $65,000 less than the estimate made last year of $679,000.

2. The estimate for 1956 is $545,000 or a reduction of $69,000 below the revised 1955 despite the fact that the overall volume is increasing.

3. The net cost to AEC for test operations in 1956 is $2,774,000 which is higher than the $2,002,000 previously estimated for 1955. This increase is due to changes in scope, size, and duration of continental and overseas tests.

[In thousands]

	Total costs for fiscal year—			Revenues for fiscal year—			Net for fiscal year—			Fiscal year 1955 previous report
	1954	1955	1956	1954	1955	1956	1954	1955	1956	
Production and research facilities:										
Oak Ridge:										
Carbide & Carbon (K-25, Y-12 and ORNL)	$1,308	$1,148	$1,028	−$1,111	−$991	−$906	$197	$157	$122	$207
Paducah	0	0	0	−15	−9	−3	−15	−9	−3	−3
Portsmouth	0	0	0	0	−15	−38	0	−15	−38	−38
National Lead Co	261	350	543	−251	−339	−528	10	11	15	8
Monsanto	87	48	0	−71	−35	0	16	13	0	19
Subtotal	1,656	1,546	1,571	−1,448	−1,389	−1,475	208	157	96	193
Savannah River	736	849	856	−512	−633	−643	224	216	213	234
Chicago:										
Argonne	251	246	252	−205	−208	−216	46	38	36	35
Westinghouse:										
Pittsburgh	92	119	150	−92	−123	−150	0	−4	0	0
Idaho	50	54	40	−37	−38	−15	13	16	25	4
Subtotal	393	419	442	−334	−369	−381	59	50	61	39
Idaho	108	125	128	−66	−75	−78	42	50	50	50
Santa Fe:										
Dow Chemical Co., Denver	68	60	61	−43	−41	−43	25	19	18	24
Procter & Gamble, Amarillo	116	62	63	−90	−45	−44	26	17	19	20
Universal Food Services	43	0	0	−29	0	0	14	0	0	0
Sandia Corp.:										
Albuquerque	162	146	146	−142	−128	−128	20	18	18	20
Salton Sea	111	88	88	−61	−58	−58	50	30	30	40
LASL	79	107	105	−62	−97	−105	17	10	0	0
Silas Mason, Burlington	5	5	5	0	0	0	5	5	5	5
Bendix, Kansas City	242	257	286	−243	−259	−287	−1	−2	−1	0
Zia, Los Alamos	105	92	93	−76	−77	−86	29	15	7	25
Project Eye, Inyokern	2	0	0	0	0	0	2	0	0	0
Subtotal	933	817	847	−746	−705	−751	187	112	96	134
New York: Associated Universities, Brookhaven	9	9	9	0	0	0	9	9	9	9
San Francisco:										
Stewart Hill, Berkeley, Calif	16	16	16	0	0	0	16	16	16	16
Nationwide Food Service, Livermore, Calif	4	4	4	0	0	0	4	4	4	4
Subtotal	20	20	20	0	0	0	20	20	20	20
Grand total production and research facilities	3,855	3,785	3,873	−3,106	−3,171	−3,328	749	614	545	679
Test-site facilities:										
Holmes and Narver, Eniwetok	4,559	3,024	3,891	−1,263	−425	−1,310	3,296	2,599	2,581	1,980
Olympic Commissary, Mercury	322	634	341	−105	−510	−148	217	124	193	22
Subtotal	4,881	3,658	4,232	−1,368	−935	−1,458	3,513	2,723	2,774	2,002

Mr. RABAUT. What causes you to have losses on the cafeterias that you conduct?

Mr. FIELDS. Largely I think because they don't operate at all times.

Mr. RABAUT. They operate only at the noonday meal?

Mr. FIELDS. Some of them only at the noonday meal or special meals. I think that is probably the biggest cause of it.

Mr. RABAUT. Off the record.

(Discussion off the record.)

Mr. PHILLIPS. Does your estimated loss cover anything more than what would be the amount of a rent factor? In most of these installations we give it free rent.

Mr. FIELDS. This is just operating, I believe, sir.

Mr. PHILLIPS. That would be rent and light. We probably give rent and light, and I presume we give water?

Mr. FIELDS. Yes, sir.

Mr. PHILLIPS. Do we have a cash loss in addition to that?

Mr. FIELDS. You mean in addition to the rent and these other factors?

Mr. PHILLIPS. Yes.

Mr. FIELDS. Yes, sir.

Mr. PHILLIPS. Does that loss apply more or less equally or proportionately over all the system or just in specific places?

Mr. BURROWS. The biggest loss takes place at the proving grounds, and by far the biggest loss is at Eniwetok where you know we have a very peculiar problem.

Mr. PHILLIPS. Those are exceptional conditions. What I am trying to find out is if you have a loss at the normal installations of the Atomic Energy Commission.

Mr. BURROWS. In some installations we are actually making some net. In some we are practically even. The place where we have the biggest losses is at Carbide and Oak Ridge. The problem there is a problem of wage rates.

Mr. PHILLIPS. I don't quite see the problem of wage rates. If the wage rates are high for cafeteria employees, they must necessarily be high for the employees who eat in the cafeteria.

Mr. BURROWS. Yes. We still attempt to charge for meals in the interest of maintaining employee morale not more than they would pay at a comparable installation somewhere else.

Mr. SMITH. The wage-rate problem at Carbide that differentiates from other places is this: Ordinarily a concessionaire deals with the Culinary Workers Union, and their wage rates, by and large, are based upon the wage rates that are paid in restaurants and like institutions around the country. They pay prevailing rates. Carbide deals entirely with the unions in their plant. In the K–25 plant it is the Chemical Workers Union. In the X–10 plant it is an AFL set of craft unions, plumbers, electricians, and like that. The rates that they pay down there are geared to the other plant rates. They are geared to crafts who normally receive higher rates than culinary workers, so the workers in the Oak Ridge cafeterias by reason of their affiliation and close relations with higher priced crafts have a higher base when they are working directly for Carbide than is the case with workers in other plants where you have concessionaires that normally gear their rates to the culinary workers rates.

(Discussion off the record.)

TOTAL INVESTMENT IN COMMUNITIES

Mr. RABAUT. Could you furnish to the committee the total investments in these communities?

Mr. FIELDS. Yes, sir, we could.

Mr. RABAUT. How many communities have you?

Mr. FIELDS. We have four communities. The three main communities are at Oak Ridge, Hanford, and Los Alamos. Then they have housing at Sandia Base, which is at Albuquerque, N. Mex. They have some housing at Monticello but we have no community costs there.

Dr. LIBBY. Really in the sense of the chairman, we have just three.

Mr. FIELDS. We have community operations at four of them because Sandia is included. We can supply it for the record.

Mr. RABAUT. Please supply us the investment in those communities.

Mr. FIELDS. Yes, sir.

(The information referred to follows:)

Community facilities—Cost of completed plant as of June 30, 1954

[In thousands]

	Improvements to land	Buildings and structures	Utilities and equipment	Total
Oak Ridge, completed plant	$19,836	$77,843	$21,729	$119,408
Richland, completed plant	12,893	70,377	17,694	100,964
Los Alamos and Sandia, completed plant	9,467	64,839	3,014	77,320
Grand Junction, completed plant	0	502	663	1,165
Total, completed plant	42,196	213,561	43,100	298,857
Less depreciation through June 30, 1954	14,521	55,525	12,551	82,597
Net book value as of June 30, 1954	27,675	158,036	30,549	216,260

Mr. RABAUT. Touch roughly on about what they consist of.

Mr. FIELDS. I have that figure right here now, sir, if you would like it.

(Discussion off the record.)

Mr. JENSEN. On what basis do you determine rentals for these homes?

Mr. FIELDS. We follow the Bureau of the Budget circular on that. We make surveys of the prevailing rental rates, comparing our quarters against quarters in the communities surrounding and on the basis of prevailing rates in surrounding communities our rental rates are set. Similarly on the utilities, the rates for the utilities are established in accordance with the prevailing rates in the surrounding communities.

Mr. JENSEN. You must determine by some method how you are going to make these communities self-supporting, which apparently you are doing.

Mr. FIELDS. With the rents and the utilities revenue—the substantial items of revenue—counterbalancing the gross costs we come out with a net revenue.

Dr. LIBBY. I think perhaps we should point out to the committee that we have a bill before the Congress now to dispose of Oak Ridge and Hanford. So we are trying to dispose of both Oak Ridge and Hanford.

Mr. JENSEN. Are you paying any interest on your investment?
Mr. FIELDS. No, sir, we are not.
Mr. JENSEN. You are not amortizing any of the capital costs?
Mr. FIELDS. That is correct.
Mr. JENSEN. That makes a lot of difference.
Mr. RABAUT. He stated that in his original statement.
Mr. JENSEN. I am sorry, I did not understand that. The same situation prevails in the Bureau of Reclamation and the Army Engineers. Certainly you are making a better showing than they are.

If you would like to add something to your testimony, because I don't mind telling you I expect to use this as time goes along, in the hope that maybe we can get some of the rest of these Government communities on a self-supporting basis, it would be helpful.

Dr. LIBBY. We can supply that, can we not, Mr. Fields, that is, a statement on our general community management policy?
Mr. FIELDS. Yes, sir, we can do that.
Mr. JENSEN. I will appreciate it if you will do that.
Mr. FIELDS. Yes, sir.
(The information referred to follows:)

ATOMIC ENERGY COMMISSION COMMUNITY OPERATING POLICIES

The Atomic Energy Commission currently operates three Government-owned communities which were established by the Manhattan Engineering District in the early days of the atomic-energy program. The communities and their estimated 1956 population are: Oak Ridge, Tenn., 32,500, Richland, Wash., 28,000, and Los Alamos, N. Mex., 13,000.

These communities are provided with complete municipal services including schools, police and fire protection, utilities, etc. In addition at Sandia Base, N. Mex., housing facilities with certain limited municipal services are provided and in the uranium mining area of Colorado and Utah there are a few small housing projects involving no municipal services.

At each of the communities, revenues from rents, utilities and other sources exceed the total cost of operation. The housing projects also produce a net revenue. In all cases, however, the net revenue is exclusive of depreciation or amortization.

The Commission's basic policy in regard to charges to residents is that they be comparable with charges for like services or facilities in surrounding communities. This policy was established by the AEC on its own initiative in 1949 and was subsequently adapted as a Federal policy under the provisions of Circular A-45 issued by the Bureau of the Budget on July 9, 1951. The provisions of this circular were given authority of law by Supplemental Appropriation Act, 1953 (Public Law 547, approved July 15, 1952).

The policy as to standards of public service and public education which are provided or supported by the Commission vary somewhat with location. In general, per capita expenditures do not exceed the upper quartile expenditures of dormitory cities of 25,000 to 50,000 population and in some instances are substantially lower. The standards which now prevail have evolved over a period of years and represent the Commission's best judgment as to those required to insure recruitment and retention of personnel with due regard for sound economy of operation.

Continued efforts to effect economies under these operating standards coupled with increases in revenues on the basis of maintaining comparability in rents and other charges have resulted in a situation in which income now and in the future can be expected to exceed expenses.

Program Direction and Administration

Mr. Rabaut. We will move on to page 116 and we will take up program direction and administration. I notice in 1955 the estimate was $33,353,000. The request for 1956 is $33,210,000.

Mr. Fields. A decrease of $143,000.

Mr. Rabaut. A decrease of $143,000. We are glad to read that.

We will put in the record at this point pages 116 to 125 of the justification.

(The justification is as follows:)

Program Direction and Administration—Operating Costs

Program statement

Estimate, fiscal year 1956	$33, 210, 000
Estimate, fiscal year 1955	33, 353, 000
Decrease	143, 000

The atomic-energy programs are directed by Commission employees budgeted under Program Direction and Administration. The employees budgeted under this program are responsible for (1) negotiating production, research, construction, and other related contracts, (2) maintaining essential liaison with the contractors to assure protection of the Government's interest in contract performance, (3) developing standards and control measures for internal security and protection of Government funds and property, (4) licensing the peaceful uses of atomic energy, encouraging private civilian application and a program of cooperation with other nations, and (5) provision of normal administrative services required for AEC personnel.

Program Direction and Administration activities are conducted through 10 operations offices and 15 area offices under the direction of Washington headquarters. A few personnel are assigned to other locations where AEC business is conducted, but which do not carry the title or the full complement of personnel that would be assigned to an area or operations office. The cost of Program Direction and Administration includes personal services, travel, and related supporting costs for office operation and maintenance.

The major growth of the atomic energy program occurs during the 6-year period from 1950 through 1956 as evidenced by the increase in the value of plant-in-place which increased from approximately $2.1 billion at the end of fiscal year 1950 to an estimated $7.1 billion at the end of fiscal year 1956. Consistent with the growth of the atomic energy program, employment under program direction and administration reached a peak of 5,025 employees at the end of fiscal year 1953. The Commission will have reduced this strength to a level of 4,322 employees at the end of fiscal year 1955 and with a further reduction during fiscal year 1956 to a level of 4,268 employees on June 30, 1956. In fiscal year 1950, the costs of program direction and administration represented 7.1 percent of total operating costs, whereas the 1956 budget provides for a ratio of only 2.3 percent of estimated operating costs. While additional personnel will be required during the latter part of fiscal year 1955 and 1956 to handle licensing and other functions related to the civilian applications of atomic energy and a program of cooperation with other nations, this budget provides that these requirements will be more than offset by the reduction of employment related to completion of major elements of construction under the Oak Ridge and Hanford Operations Offices.

Summary of estimates by category

Category	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
1. Personal services	$26,989,698	$26,590,000	$26,330,000
2. Travel	1,314,856	1,450,000	1,668,000
3. Other objects	5,150,657	5,313,000	5,212,000
Total, program direction and administration	[1] 33,455,211	[1] 33,353,000	33,210,000

[1] Adjusted for comparability as follows:

Category	Actual, fiscal year 1954	Estimate, fiscal year 1955
Transfer of 73 inspectors to weapons program	−$504,000	0
Transfer of 45 employees of Las Vegas and Eniwetok office from weapons program	+345,000	+$383,000
Net comparability adjustment	−159,000	+383,000

JUSTIFICATION BY CATEGORY

1. Personal services, $26,330,000

Program direction and administrative service functions are provided by a permanent staff of approximately 4,300 full-time AEC employees augmented by a small number of professional and scientific consultants whose services are available only for limited periods. Requirements for personal services costs are tabulated as follows:

	Fiscal year 1955	Fiscal year 1956
(*a*) Net cost of permanent employees	$26,010,000	$25,772,000
(*b*) Positions other than permanent	180,000	180,000
(*c*) Regular pay in excess of 52-week base	100,000	98,000
(*d*) Payment above basic rates	285,000	265,000
(*e*) Payments to other agencies for reimbursable details	15,000	15,000
Total personal services	26,590,000	26,330,000

The details of the personal services estimate are as follows:

(*a*) Net cost of permanent employees:

Fiscal year 1955	$26,010,000
Fiscal year 1956	25,772,000

Starting and ending employment for fiscal years 1955 and 1956 is related to average employment on the following table. The net basic salary cost of permanent employees is projected on estimated costs of average employment, plus costs of terminal-leave payments.

	Fiscal year 1955	Fiscal year 1956
I. Employment:		
(*a*) Starting employment	4,429	4,322
(*b*) Ending employment	4,322	4,268
(*c*) Average employment	4,354	4,221
II. Terminal leave:		
(*a*) Man-year equivalent of terminal leave payments	49	41
(*b*) Net permanent man-years (sum of average employment and terminal leave man-years, line I c plus line II a)	4,403	4,262
III. Average man-year cost	$5,907	$6,047
IV. Net cost of permanent employees (line II b multiplied by line III)	$26,010,000	$25,772,000

The first factor, employment, is based on the actual starting employment at the beginning of fiscal year 1955 of 4,429, a projected employment at the end of 1955 of 4,322, and a projected employment at the end of fiscal year 1956 of 4,268. There is a net reduction of 161 employees over the 2-year period. The average employment of 4,354 in fiscal year 1955 and 4,221 in fiscal year 1956 represents the net effect of reductions in personnel related to completion of major construction and other economies with increases required incident to increased production of raw materials and new functions authorized under the Atomic Energy Act of 1954, such as licensing and encouraging the civilian application of atomic energy.

In addition to the actual average employment provided in the estimate, there must also be included an equivalent number of man-years for people who will have separated from Commission employment, and who will have drawn terminal-leave payments from the Commission although not engaged in the work. The estimate of this man-year equivalent for fiscal year 1955 and 1956 is 49 and 41, respectively. In each of these years, these amounts represent approximately 1 percent of the average employment during the year which is based on the Commission's experience for the past 2 years.

The third factor, an increase in the average cost per employee of $140 in fiscal year 1956 over the fiscal year 1955 average costs is due to (1) automatic within-grade advancements amounting to approximately $90 per employee for fiscal year 1956, and (2) the effect of reducing the number of lower-salaried personnel by reason of the decreases in the construction force.

The distribution of permanent civilian employment under program direction and administration in terms of year-end strength for each of our operations offices, is shown below:

Office and location	Employment		
	June 30, 1954	June 30, 1955	June 30, 1956
Grand Junction Operations Office, Grand Junction, Colo	123	145	150
Hanford Operations Office, Richland, Wash	356	318	288
Oak Ridge Operations Office, Oak Ridge, Tenn	838	900	870
Savannah River Operations Office, Augusta, Ga	276	245	245
Santa Fe Operations Office, Albuquerque, N. Mex	676	678	678
San Francisco Operations Office, Oakland, Calif	115	112	109
New York Operations Office, New York, N. Y	286	125	125
Idaho Operations Office, Idaho Falls, Idaho	96	88	88
Chicago Operations Office, Lemont, Ill	263	273	277
Schenectady Operations Office, Schenectady, N. Y	69	70	70
Total, field	3,098	2,954	2,900
Washington headquarters, Washington, D. C., and extensions, Oak Ridge, Tenn	1,331	1,368	1,368
Total, permanent civilian employment	4,429	4,322	4,268

The reasons for changes in strength in each of the various operations officers may be summarized as follows:

Grand Junction operations office, plus 5 employees.—Additional personnel will be required because of expanded procurement and engineering assistance required in connection with new and enlarged mill facilities. Increased prospecting and mining activities by private mining firms and individuals will increase demands for assistance, chiefly in the Mining Division.

Hanford operations office, minus 30 employees.—The completion of a major part of the expansion program in 1955 will reduce the requirements for AEC personnel, chiefly in the Engineering and Construction Division.

Oak Ridge operations office, minus 30 employees.—The completion of the major elements of construction will make possible the reduction of staff in the Oak Ridge construction area, Portsmouth and Paducah.

Chicago operations office, plus 4 employees.—Increased efforts under the Pratt & Whitney contract will require on-the-site administration of this contract. Four additional employees, to be assigned to East Hartford, Conn., are budgeted for this purpose.

(*b*) Positions other than permanent:

Fiscal year 1955	$180,000
Fiscal year 1956	$180,000
Man-years of part-time and WAE employment:	
Fiscal year 1955	21.3
Fiscal year 1956	21.3

Includes members of the General Advisory Committee, the Patent Compensation Board, members of other boards, committees and panels, and other experts and consultants to the Commission who are paid only when employed. The fiscal year 1956 estimate is based on fiscal year 1955 experience.

(*c*) Regular pay in excess of 52-week base:

Fiscal year 1955	$100,000
Fiscal year 1956	98,000

Compensation of permanent employees requires funding for extra days of pay when more than 260 days of pay occur in 1 fiscal year. During fiscal year 1955 and 1956, there will be 261 days of pay and 1 extra day's pay is provided for those years. The decrease in fiscal year 1956 is proportional to the decrease in the net cost of permanent employees.

(*d*) Payment above basic rates:

Fiscal year 1955	$285,000
Fiscal year 1956	265,000

This provides for authorized overtime to regular AEC employees during peak periods of work. Included is $70,000 in fiscal year 1955 and $92,000 in fiscal year 1956 for increased overtime rates of pay (Public Law 763). The decrease reflects reduction in overtime at Idaho and other domestic locations.

(*e*) Payments to other agencies for reimbursable details:

Fiscal year 1955	$15,000
Fiscal year 1956	15,000

Includes secretarial services furnished to the Johannesburg, South Africa, office by the Department of State and testing services furnished to the Santa Fe Operations Office by the Civil Service Commission.

2. Travel, $1,668,000

Commission personnel assigned to program direction and administration travel to laboratory, production, testing, and storage facilities for administration of contracts, to work with the contractors and field offices in new scientific and production developments and to inspect and audit for compliance with standards established for internal security, personnel, property, and funds.

An increase of $218,000 requested for 1956 is required for travel in connection with new functions authorized by the Atomic Energy Act of 1954, in the development and expansion of raw materials procurement, in directing expanded weapons production and storage facilities and in administering an expanded reactor program. The number of days of travel and travel costs for each of our operations offices are shown as follows:

Office and location	Fiscal year 1955		Fiscal year 1956	
	Days of travel	Cost	Days of travel	Cost
Grand Junction Operations Office, Grand Junction, Colo	4,163	$51,000	6,350	$75,000
Hanford Operations Office, Richland, Wash	1,430	50,000	1,384	48,000
Oak Ridge Operations Office, Oak Ridge, Tenn	6,450	170,000	6,538	170,000
Savannah River Operations Office, Augusta, Ga	2,417	72,000	2,284	68,000
Santa Fe Operations Office, Albuquerque, N. Mex	14,389	297,000	14,658	320,000
San Francisco Operations Office, Oakland, Calif	935	29,000	935	29,000
New York Operations Office, New York, N. Y	1,739	41,000	1,739	41,000
Idaho Operations Office, Idaho Falls, Idaho	733	33,000	733	33,000
Chicago Operations Office, Lemont, Ill	2,802	82,000	3,086	89,000
Schenectady Operations Office, Schenectady, N. Y	1,067	32,000	1,067	32,000
Total, field	36,125	857,000	38,774	905,000
Washington headquarters, Washington, D. C., and extensions, Oak Ridge, Tenn	18,706	593,000	24,161	763,000
Total, travel	54,831	1,450,000	62,935	1,668,000

The reasons for changes in estimated travel costs for each of the various operations offices may be summarized as follows:

Grand Junction operations office, +$24,000.—Travel of Mining Division and Ore Processing Division personnel to an increasing number of mining and ore processing sites in administering the bonus program, inspecting of mine applications, reviewing mill sampling and assaying practices, and administering ore procurement contracts. Related increases are required for security inspections.

Santa Fe operations office, +$23,000.—Administration of additional storage sites and supervision of new and expanded contracts.

Chicago operations office, +$7,000.—Travel required to handle expansion of aircraft nuclear propulsion program.

Washington headquarters, +$170,000.—The program of international cooperation in the atomic-energy field will require $75,000 for overseas travel in 1956. Administration of the program for licensing commercial, medical, and research uses of atomic energy and related activities with respect to the civilian application of atomic energy will require additional domestic travel estimated at $40,000 in 1956. The travel of scientific, technical, professional, and administrative employees for training at approved educational institutions, as authorized by section 161 (n) of the Atomic Energy Act of 1954, will require an increase of $15,000. An additional $40,000 in travel from the Washington headquarters will be required for (1) trips to laboratory and contractor sites in development of new reactors, and (2) military, medical, and other travel related to tests.

3. Other objects, $5,212,000

Includes costs of communications, rents, utilities, supplies, maintenance, and other services for 10 operations offices, 15 area offices, and the Washington headquarters Also included under this heading are supplies and services required for the Technical Information Service printing and reference facility and the contractual cost of operating the American Museum of Atomic Energy at Oak Ridge The costs of the AEC contribution for employee group life insurance (Public Law 598) are included in the amounts of $70,000 in fiscal year 1955 and $80,000 in fiscal year 1956.

The reduction of $101,000 in other objects costs during 1956 anticipates savings of $70,000 annually in the cost of operating the Technical Information Service, Oak Ridge extension and other savings consistent with projected reductions in employment.

The distribution of other objects costs by operations office appears in the following table:

Office and location	Fiscal year 1955	Fiscal year 1956
Grand Junction Operations Office, Grand Junction, Colo	$123,000	$140,000
Hanford Operations Office, Richland, Wash	445,000	439,000
Oak Ridge Operations Office, Oak Ridge, Tenn	1,002,000	999,000
Savannah River Operations Office, Augusta, Ga	327,000	327,000
Santa Fe Operations Office, Albuquerque, N. Mex	727,000	741,000
San Francisco Operations Office, Oakland, Calif	158,000	151,000
New York Operations Office, New York, N. Y	189,000	183,000
Idaho Operations Office, Idaho Falls, Idaho	196,000	196,000
Chicago Operations Office, Lemont, Ill	255,000	255,000
Schenectady Operations Office, Schenectady, N. Y	39,000	39,000
Total, field	3,461,000	3,470,000
Washington headquarters, Washington, D. C., and extensions, Oak Ridge, Tenn	1,852,000	1,742,000
Total, other objects	5,313,000	5,212,000

The reasons for changes, by office, are summarized below:

Grand Junction operations office, +$17,000.—Additional cost of supplies and services attendant to increased employment.

Santa Fe operations office, +$14,000.—This increase represents the cost of services previously furnished by contractors.

Washington headquarters and extensions, −$110,000.—Savings in the cost of operating the Technical Information Service, Oak Ridge extension, in the amount of $70,000, and a reduction in service costs of $40,000.

REDUCTION IN OVERTIME PAY

Mr. RABAUT. Part of the decrease in administration is attributable to a reduction in overtime. It is noted on page 121 that Idaho is singled out as one of the areas reflecting a reduction in overtime. Will you enlarge upon this and explain the need for overtime pay in certain areas?

Mr. FIELDS. We have a requirement for overtime pay from time to time because of peak periods that come in the work where we just have to have overtime work by employees.

Mr. RABAUT. Off the record.

(Discussion off the record.)

STAFFING AT NEVADA PROVING GROUNDS

Mr. RABAUT. Very well. Now I would like to discuss one other matter, staffing at the Nevada Proving Grounds. This is not a big item. But again it is in the report by the General Accounting Office that I quoted from before. Here is what the report says:

> We noted that there were 26 AEC employees at an area office where the principal function is the administration of the 2 contractors who maintain the Nevada proving grounds. This number is just one less than the number employed during the time when the tests are conducted.

So even while the tests are conducted, you need only one more man.

> One employee resigned and was not replaced. In addition, we notice that most of one contractor's employees, both administrative and operating, work at the site of the proving ground, and because of the distance from the nearest city, they are paid special per diem allowances. The need to have the administrative employees on duty at the test site is doubtful.

That is criticism from the General Accounting Office. What have you to say with respect to that?

Mr. FIELDS. I don't know the period of time to which they are referring, but between actual operational periods of the tests is when most of the construction and preparation for the tests takes place. That is when you build the firing area, the towers that go into it, and make the general preparations for the test.

Mr. RABAUT. They figure that those people ought to be put on temporarily at the time you have a test, and there ought to be a minimum of employees at it the rest of the time. That is what the next paragraph says.

Mr. FIELDS. That is correct. It takes something like 6 to 9 months to do the construction work that is associated with one of these tests in advance of the test period.

Mr. RABAUT. Are these people that work with the construction contractors?

Mr. FIELDS. No, sir.

Mr. RABAUT. They just stand around and watch them?

Mr. FIELDS. These are the Atomic Energy Commission employees who supervise the work that goes on there and supervise the execution of the contract. We have an architect engineer firm employed there who do the design work and the inspection of the construction that is done by another contractor there. We have to have an administrative group to supervise those contracts, and for the contacts back with the laboratories to get the criteria and the plans for things that have to be built.

What I am saying is that between tests there is still a lot of operations that go on at the proving grounds. It is preparation and construction primarily in advance of the test.

Mr. RABAUT. And they have a note which says, "Who maintain the Nevada Proving Grounds." Those are not the people who are watching the contractors or watching what the contractors are doing?

Mr. FIELDS. The contractors maintain the proving grounds.

Mr. RABAUT. These are the people who are working around on the grounds. You have to have just as many there when you are not making any tests as you do when you are building a building?

Mr. FIELDS. As I say, I don't know the period they are talking about here.

Mr. RABAUT. Suppose you look into it. We have called your attention to it on the record.

Mr. FIELDS. I will do that.

Could I say something off the record?

Mr. RABAUT. Yes.

(Discussion off the record.)

INCREASE IN LIMITATION ON PERSONAL SERVICES

Mr. RABAUT. On page 117 and recorded also in the bill, since there is a decrease in the program direction and administration which contains principally personnel services, why do you request an increase in the limitation on the personal services in the language of the bill? What accounts for such an increase? That is on page 118 of the bill.

Mr. FIELDS. The program you are looking at here is for program direction and administration, which is the category of general direction of AEC programs for the programing, budgeting, contract administration and activities of that nature. We have certain AEC personnel who are charged specifically to the programs that we have gone through. These will be inspectors in plants where weapons are being produced. They will be couriers who do courier service in shipments of materials. They may be the employees at the Nevada Proving Grounds, or some of them. These employees are charged directly to the program.

This is what we call our program direction that we have been talking about, program 8000. Each of the other programs like weapons or fissionable material production or raw materials will have other employees who are doing direct program work as opposed to administration and supervision of programs.

Mr. RABAUT. One of those comes in this category.

Mr. FIELDS. The program administration comes in this category. It includes all of us here, for instance.

Mr. RABAUT. Does it come under that limitation in the bill?

Mr. MCCARTHY. Yes. The total of $38,202,000, Mr. Chairman.

Mr. RABAUT. Did you have this sort of division before?

Mr. MCCARTHY. Yes, sir; we did in each of the past years. It breaks down into the $26,330,000 required in this program. There is $11,872,000 for personal services in other programs of the budget.

Mr. RABAUT. What is the percentage of this amount that really is in other programs?

Mr. MCCARTHY. The percentage of the total?

Mr. RABAUT. We will make it easier. Will you supply for the record a breakdown?

Mr. MCCARTHY. We will be glad to, sir.

(The information referred to follows:)

Average number and cost of AEC direct employment distribution by program

Program title	Average number of all employees	Cost (in thousands)	Percent of total cost
Raw materials	439	$2,387	6
Fissionable materials	198	1,276	4
Weapons	1,034	5,822	15
Reactor development	224	1,239	3
Biology and medicine	64	327	1
Community	154	821	2
Total other programs	2,113	11,872	31
Program direction and administration	4,283	26,330	69
Total AEC direct employment	6,396	38,202	100

Personnel included under Program Direction and Administration are engaged in executive management of program operations; negotiation and administration of contracts; development and application of standards and control measures for internal security and protection of Government funds and property; and supporting administrative services. Personnel charged to other programs are directly engaged in operation or security protection of plants, laboratories, or other operations. This includes, for example, geologists and others involved in exploration under the raw materials program, the operation of the New Brunswick Laboratory under the fissionable materials program, operation of the New York Health and Safety Laboratory under the biology and medicine program and the perimeter guards protecting plants at Oak Ridge and elsewhere.

Mr. RABAUT. Is there anything you wish to add?

Mr. FIELDS. I think I have said everything I have to say on that.

PREPARATION OF ADMINISTRATIVE REPORTS

Mr. RABAUT. We have been advised that last year you made some progress in reducing the time you spent on reports. What progress has been made in this direction during recent years, and what are the results? Let us take it in recent months.

Mr. FIELDS. I am not sure that I understand that question, sir.

Mr. RABAUT. It was stated last year that you had made progress in reducing the time that you spent on reports. I would like to know what you are doing about that now, and whether you are still working on the reduction of time consumed in making out reports in order that you can be devoting more of your time to the real purpose of the activity.

Mr. FIELDS. I don't have a reply I could make to you here today, myself. I am just new in this position and I could not very well handle that one. I do think we are attempting to reduce reports, and that certainly is going to be my intent.

Mr. RABAUT. What do you know about it, Mr. Commissioner?

Dr. LIBBY. I am only a freshman also, having been here only 6 months. But I noted the other day they ran out of a particular brand of green paper that they use.

Mr. FIELDS. May I ask our controller, Mr. Burrows, to speak on that point?

Mr. BURROWS. Last year, we surveyed every specific report, and a number of them were reduced in content, and some were eliminated

altogether. Since that time no new report can come in unless it is specifically proven that it is absolutely necessary for the conduct of the work. While we have not made any great reduction over the previous reduction we made, it is because we feel that we have gotten down to the minimum we needed to operate with.

Mr. RABAUT. You think you have it down to a minimum?

Mr. BURROWS. As far as we know, sir, we have. Any new report requires specific justification.

Mr. RABAUT. I would like to have you keep watching that matter.

STENOGRAPHIC POOLS

What, if anything, has been done to establish stenographic pools and reduce the ratio of stenographers to total employees?

Mr. SMITH. We reviewed that across the Commission as a whole, and there have been small pools established here and there in individual divisions. We found that it would just not be economical to try to establish a pool for the Washington office with four locations and scattered around the way we are.

Mr. RABAUT. It all depends on how many people you have in one place.

Mr. SMITH. We do have some small pools in individual divisions. Our studies indicated it would not be economic to try to do it on an all-out Washington basis.

Mr. FIELDS. One of our problems in pools in certain areas is security, in that our information, although we are all cleared, is sometimes compartmentalized as between one division and another. For instance, the stockpile information, many people in this room do not have access to that. So you have this problem.

We also are in different locations here in Washington in three separate buildings. So it is a very difficult problem to have a central pool.

Mr. RABAUT. Is anybody in charge of trying to watch these expenses?

Mr. FIELDS. Yes, sir. The managers of operations themselves. In Washington here it would be an administrative management problem. The same would apply in all the operations offices.

Dr. LIBBY. I would say the General Manager is in charge.

Mr. RABAUT. The right man was answering the question. I think you should watch it because we will ask you about that again.

Mr. FIELDS. We will take a look at that, sir.

Mr. RABAUT. Have you said everything you think you should say on that?

Mr. FIELDS. Yes, sir, I believe so.

SECURITY INVESTIGATIONS PROGRAM

Mr. RABAUT. The next item appears on page 126. This is the security investigations program.

Mr. FIELDS. Yes, sir.

Mr. RABAUT. I notice that the appropriation for 1955 was $9,580,000, and the request for 1956 is $5,720,000, or a decrease of $3,860,000. How much money have you unexpended in this account?

Mr. McCarthy. Not a whole lot. It will run pretty tight for the balance of the year, because we have some cases now that we have to send to the investigative services. The operating costs through the month of March on the security investigations ran to $7.7 million, leaving us a monthly balance for the last 3 months of something less than we have been running.

Mr. Rabaut. You are going to run considerably less per month hereafter.

Mr. McCarthy. We estimate that it will be just about the same. We have been running about $700,000 a month. The $7.7 will leave us $1.9 million for the last 3 months. It will be a little short of the $700,000 average for the last 3 months.

Mr. Rabaut. But you are going to run $3 million less next year.

Mr. McCarthy. Yes.

Mr. Rabaut. Why does it have to run so high in June and run so high in July?

Mr. McCarthy. This is a big drop from the beginning of the year.

Mr. Rabaut. You mean you have been doing a sliding scale since the beginning of fiscal 1955?

Mr. McCarthy. With the Atomic Energy Act of 1954, as the General Manager mentioned before, we don't have to investigate as many.

Mr. Rabaut. I remember that.

Mr. McCarthy. So there will be less cases next year.

Mr. Rabaut. I will insert in the record pages 126 to 128, inclusive of the justification.

(The justification is as follows:)

Security Investigations Program—Operating Costs

Program statement

Estimate, fiscal year 1956	$5,720,000
Estimate, fiscal year 1955	9,580,000
Decrease	$3,860,000

This program covers the costs of security investigations required by the Atomic Energy Act of 1954 which, as a means of controlling access to restricted data, provides that no individual shall be permitted access to restricted data until the United States Civil Service Commission, or, under certain conditions, the Federal Bureau of Investigation has made an investigation and report to the AEC on the character, associations, and loyalty of such individual and the AEC has determined that permitting such access will not endanger the common defense and security. Published policies and standards provide guidance for determining need for security clearances.

The reduction in the estimated cost of this program in fiscal year 1956 as compared with fiscal year 1955 is due principally to the impact of the Atomic Energy Act of 1954 which (1) authorizes the use of national agency checks (for "L" clearance) at a cost of $3.90 each, in lieu of full background investigations (for "Q" clearance) at a cost of $230 each for certain categories of restricted data, and (2) relieves AEC of the responsibility for investigating large numbers of Department of Defense personnel.

Clearance needs of AEC contractors account for approximately 75 percent of the number of full field investigations estimated for fiscal year 1956, the remainder being attributable to clearance needs of AEC (5 percent), reinvestigation program (8 percent), and "Other" (12 percent).

Distribution of investigative caseload between USCSC and FBI is based upon Commission-approved criteria for determining positions of a high degree of importance and sensitivity pursuant to provisions of the Atomic Energy Act of 1954.

The cost of completed cases and the number of completed cases is shown in the following table with related information on cases in process at the close of

each fiscal year and the number of new cases to be referred to each investigative agency. Completed cases represent the number referred to the investigative agencies during each year, adjusted to changes in numbers of cases in process from the beginning to the end of the year.

Summary of estimates

	Fiscal year 1954, actual	Fiscal year 1955, estimate	Fiscal year 1956, estimate
1. Number of new cases referred to investigating agency:			
Federal Bureau of Investigation	24,859	15,000	11,000
Civil Service Commission	29,976	22,500	14,900
Total	54,835	37,500	25,900
2. Number of cases in process at end of year in investigating agency:			
Federal Bureau of Investigation	6,148	2,100	2,100
Civil Service Commission	3,945	2,200	2,200
Total	10,093	4,300	4,300
3. Cost of completed investigations:			
Number of "Q" cases completed by Federal Bureau of Investigation	29,206	19,050	11,000
Cost per investigation	$205.45	$205.45	$205.45
Total cost, FBI	$6,000,373	$3,913,000	$2,260,000
Number of "Q" cases completed by Civil Service Commission	29,412	24,200	14,900
Cost per investigation	$224	$233	$230
Total cost, CSC "Q" cases	$6,592,530	$5,642,000	$3,418,000
Number of "L" cases completed by Civil Service Commission	0	6,500	11,200
Cost per investigation	0	$3.90	$3.90
Total cost, CSC "L" cases	0	$25,000	$42,000
Total cost, security investigations program	$12,592,903	$9,580,000	$5,720,000

JUSTIFICATION OF ESTIMATES

The estimated number of personnel investigations are based on requirements of the AEC, contractors to the AEC, other Government agencies and interested individuals for access to restricted data. Cost per unit of investigation is based on cost data developed by each investigating agency and reflects the average cost per fiscal year.

A summary of the number of full field investigations (Q) for fiscal year 1956, in relation to category of personnel for whom investigation will be required, is shown in the following table:

Number of full field (Q) investigations to be referred to investigative agencies

Category of personnel	Fiscal year 1954, actual	Fiscal year 1955, estimate	Fiscal year 1956, estimate
AEC	1,005	1,200	1,200
Contractor (construction)	14,981	5,400	1,500
Contractor (operating)	16,688	19,000	18,200
Military	12,785	6,400	0
Other	4,309	3,000	3,000
Reinvestigation	5,067	2,500	2,000
Total cases	54,835	37,500	25,900

The number of investigations of contractor construction employees decrease in 1955 and 1956 anticipating completion of major construction and the implementation of the Atomic Energy Act of 1954. Requirements for investigations of operating contractor employees include clearances of employees for the operation of new production facilities. Investigations of military personnel are excluded in

fiscal year 1956 pursuant to an agreement between the Atomic Energy Commission and the Department of Defense under the Atomic Energy Act of 1954. The reinvestigation of previously cleared personnel is continued at a reduced level to protect the atomic energy program from individuals whose clearance eligibility may have changed since the date of their previous clearance.

The use of national agency checks ("L" type investigations) was instituted in November 1954. Fiscal year 1956 will be the first full year that national agency checks will be used with an increase from 6,500 "L" investigations in 1955 to 11,200 "L" investigations in 1956.

INCREASE IN NUMBER OF CSC INVESTIGATIONS

Mr. RABAUT. The figures on page 127 reflect that in 1954 the FBI and Civil Service Commission handled almost the same number of Q cases. This year the CSC will handle approximately 20 percent more cases, and in 1956 you plan on having them do 35 percent more. In view of the fact that each case handled by the FBI is $24.55 less costly, what accounts for this trend?

Mr. MCCARTHY. The FBI about 2 years ago wanted, as you probably know, to get out of this business as much as possible. This was one of the reasons that the Civil Service was brought into the investigative field. However, there are certain sensitive positions under the criteria of the Atomic Energy Act which the FBI handles. So that the break between the Civil Service Commission and the FBI is based on the criterion of sensitivity. The FBI also handles some of the other work. This is the reason why the Civil Service Commission is getting the bulk of the larger portion of the investigative work.

Mr. RABAUT. Is it discretionary with you?

Mr. MCCARTHY. You mean the Commission?

Mr. RABAUT. That is, having the FBI do it?

Mr. FIELDS. It is in the sense of determining the sensitivity of the information from that criteria.

Mr. RABAUT. It is not a question of us playing up to any agency. It is a question of us getting the security we want and getting it at the best price we can because John Doe pays the bill.

Dr. LIBBY. I think perhaps the General Counsel might have a remark.

Mr. RABAUT. Very well. We would like to hear from the General Counsel.

Mr. MITCHELL. Under section 145 of the Atomic Energy Act of 1954, the Commission is directed to get background investigations from the Civil Service Commission before permitting access to restricted data, with the further provision that if the investigation made develops any data reflecting on the loyalty, then the case must be referred to the Federal Bureau of Investigation.

Mr. RABAUT. Is that provision of the law going to tend to decrease in cost or increase the cost of this department?

Mr. FIELDS. These estimates are on the basis of that law, sir.

Mr. MITCHELL. There is one further point, Mr. Chairman.

Mr. RABAUT. It is not the whole thing.

Mr. MITCHELL. With respect to the law, sir, there is one further point. The Commission itself is given discretion to designate certain positions as being sensitive, and those are to be investigated by the FBI.

Mr. RABAUT. Do you believe, from your experience with it thus far, that it will result in savings?

Mr. MITCHELL. I think the General Manager can speak to this part better.

Mr. FIELDS. Savings under the new law are reflected in the reduced costs estimated for fiscal year 1956. There are certain categories of information that require clearance, but a much lower level of clearance than these thorough investigations by the FBI and the Civil Service Commission. This is what we call an L clearance, which is really a national agency check, that we use instead of a full field investigation. This reduces the number of field investigations we need, and gives them access to the information they need.

Mr. RABAUT. We have to depend upon the discretion of the people in the agency as to who should have what type of clearance. But on the other hand, the agency, too, should have in its mind what the cost is going to be. If there are any suggestions that can be forthcoming from the agency to keep these costs down, you should do it.

Mr. MCCARTHY. I think we should point out, Mr. Chairman, that the unit costs are something we have no control over.

Mr. RABAUT. No; but there are times when you can make decisions, not that we want to put anything in jeopardy. This committee is just as determined that this should be as secret as possible, but with it all, you have to have some respect for money.

Mr. FIELDS. Sir, we have attempted to reduce these costs, and one of the reasons for the new provision in the act is that there seemed to be no reason to duplicate top-secret clearances that military personnel had by giving them a full background investigation and a Q investigation for certain kinds of information. It is now provided that the Secretary of Defense can certify and clear his own people. This sort of thing we are alert to.

(Discussion off the record.)

DUPLICATION OF SECURITY INVESTIGATIONS

Mr. PHILLIPS. I think the chairman has covered this, but I want to cover it a little more fully. What duplication is there now between the AEC and any other agency of the Government in the investigation of cases which have been given clearance by one agency, and then are again investigated by your agency? What steps are duplicated or what categories are duplicated?

Mr. MCCARTHY. I think what Mr. Phillips is referring to is where one agency has an investigation made for a top-secret clearance, and when they require a Q clearance, there is another investigation?

Mr. PHILLIPS. I am not sure it referred to Q clearance. You come up, in an investigation of a civil-service person, to a certain level and beyond that you branch off into the various categories of higher level clearances. I am still under the impression that we may not have gotten completely away from duplication. Some people are cleared and if they want clearance from you, you duplicate some of the investigation previously made. Am I right or am I wrong?

Mr. MCCARTHY. It is my impression, and this is my impression subject to check, that certainly the information that is compiled by the FBI or Civil Service in an investigation is picked up again at the time a person is investigated. His file is completed up to a certain point. I don't believe—I would have to check this, that they go back to the beginning again and recheck all the facts.

Mr. MITCHELL. I think I can answer this, Mr. Phillips. The Civil Service Commission does maintain a central file, and whenever we want to get an investigation, or similarly the FBI, we take advantage of any material that is already available. We may have to bring it up to date. Of course, if there was not a previous full background investigation, we may have to go and do that from the start. We don't go over the same ground that has been covered. We use available material. We have to conduct our own evaluation of this material as distinguished from the gathering of the facts.

CHANGES IN INVENTORIES

Mr. RABAUT. We will move on to changes in inventories, on page 129.

Mr. FIELDS. Yes, sir.

Mr. RABAUT. We will place in the record pages 129 to 135 of the justifications.

(The justification is as follows:)

CHANGE IN INVENTORIES

Program statement

Estimate, fiscal year 1956	$14,467,000
Estimate, fiscal year 1955	12,080,000
Increase	2,387,000

AEC inventories are normally financed by the issue of inventory items to users whose programs are charged for the cost of the items as they are withdrawn from inventory. Funds made available to inventory accounts by these issues are then used for replenishing inventories, and the cost of the items is charged to operating programs. It is only when the total inventory must be increased to serve new or expanded activities that additional appropriated funds are required. The estimate for inventory appropriations for AEC has taken into consideration the credit for receipts from sale of excess stores which amounted to $1,416,474 in fiscal year 1954 and is estimated at $2,600,000 for fiscal year 1955, and $950,000 for fiscal year 1956.

Inventories break down into 7 major categories: (1) Current use; (2) special process spare parts; (3) work in process, returnable containers and scrap; (4) standby; (5) excess; (6) special reactor materials; and (7) other special materials. The first five of these categories make up the general category of stores inventory.

Overall, requirements for stores inventory increase by $2.1 million in fiscal year 1956 from the fiscal year 1955 level. This change is attributable to a further increase in spare-parts inventory for new or expanded plants coming into production in fiscal year 1956, and to increases in the work in process, returnable containers and scrap category due almost entirely to large additional amounts of nickel scrap which will be generated by the Oak Ridge Operations Office in fiscal year 1956.

The major change in inventories is in connection with special reactor materials which will require an increase of $12.4 million in fiscal year 1956.

Summary by inventory

	Actual, 1954	Estimate, 1955	Estimate, 1956	Increase or decrease (−) in inventory 1956
Balance at end of year				
1. Current use inventory	$45,549,809	$46,568,809	$45,716,809	−$852,000
2. Special process spare parts inventory	14,656,480	25,751,480	28,164,480	2,413,000
3. Work in process, returnable containers and scrap	3,405,928	2,339,928	3,180,928	841,000
4. Standby inventory	3,304,516	1,107,516	1,040,516	−67,000
5. Excess inventory	1,596,614	895,614	672,614	−223,000
Total stores inventory	68,513,347	76,663,347	78,775,347	2,112,000
6. Special reactor materials	16,142,443	16,586,443	28,941,443	12,355,000
7. Other special materials	3,858,368	7,344,368	7,344,368	0
Total, all inventories	88,514,158	100,594,158	115,061,158	14,467,000
Increase or decrease (−)	−4,243,370	12,080,000	14,467,000	

1. Current use inventory, decrease −$852,000

Current use inventories include inventories of supplies and materials which are normally used or consumed in the production of source and fissionable materials and weapons, or in the operation of laboratories, towns, and administrative facilities. These inventories, a large part of which are in the possession of contractors who operate Commission facilities, include the following types of supplies:

Mechanical materials and supplies
Metals and metal alloys
Electrical materials and supplies
Fuels and lubricants
Chemicals and compounds
Building and road materials and supplies
Electronic supplies
Hardware and small tools
Laboratory supplies
Motor vehicle and heavy mobile accessories and repair parts
Office materials and supplies
Clothing
Custodial materials and supplies
Medical materials and supplies

The continuous effort to keep stores inventories at a minimum consistent with operating requirements has resulted in a reduction in the estimated current use stores inventory in fiscal year 1956 below the requirements for fiscal year 1955, despite the new and expanded facilities which will come into production in fiscal year 1956.

Increases of $0.9 million required at the Hanford, Oak Ridge, and Grand Junction operations offices, because of new or expanded facilities, are more than offset by reductions of $1.8 million in other operations offices; reductions made as a result of increased effectiveness in gearing stores procurement to stores turnover rather than because of any reduction in the production load.

The inventory levels are as follows:

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
Inventory at end of year:			
Gross inventory	$45,605,809	$46,568,809	$45,716,809
Less allowance for loss	56,000	0	0
Net current use inventory	45,549,809	46,568,809	45,716,809
Increase or decrease (−) during year		1,019,000	−852,000

2. Special process spare parts inventory, increase $2,413,000

This inventory includes items used to replace parts of special process capital equipment and are limited to those which are obtainable only by special manufacture and are unique to the AEC program, usually acquired as spares to the original complement of equipment.

The increase of $2.4 million is related exclusively to the procurement of initial spare parts at new or expanded plants which will come into operation in fiscal year 1956. Increases amounting to $3,009,000 are offset by planned reductions of $596,000 shown below:

Hanford	$225,000
Oak Ridge	390,000
Portsmouth	2,394,000
Total increases	3,009,000
Less reductions at other locations	−596,000
Net increase	2,413,000

The inventory levels are as follows:

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
Inventory at end of year:			
Gross inventory	$17,911,786	$28,043,786	$29,179,786
Less allowance for loss	3,255,306	2,292,306	1,015,306
Net spare parts inventory	14,656,480	25,751,480	28,164,480
Increase or decrease (−) during year		11,095,000	2,413,000

3. Work in process, returnable containers, and scrap inventory, increase $841,000

This inventory covers: (1) costs incurred in fabricating stores inventory items from basic stores parts or otherwise processing stores held by AEC or its contractors; (2) AEC-owned reels, drums, and other containers designed to hold materials while in transit and which the receiver returns when the materials have been removed; (3) the scrap remnants of stores which have been processed, and all deteriorated, damaged and obsolete stores items not usable for their original purpose and being held for disposal through channels or procedures other than those followed for excess stores.

Other than a small increase of $9,000 required by the Santa Fe Operations Office, the increased requirements for fiscal year 1956 are due almost entirely to an increase in the level of scrap generated at the Oak Ridge Operations Office. The inventory levels are as follows:

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
Inventory at end of year:			
Gross inventory	$3,405,928	$2,339,928	$3,180,928
Less allowance for loss	0	0	0
Net inventory	3,405,928	2,339,928	3,180,928
Increase or decrease (−) during year		−1,066,000	841,000

4. Standby inventory, decrease −$67,000

This inventory includes only those materials, supplies, and parts held for future operation of facilities placed in standby; those items stocked solely for use in the event of disaster, invasion, or other emergency; and items determined to be stockpiled. As shown above, the fiscal year 1956 estimate anticipates a small decrease in this inventory account. The inventory levels are as follows:

	Actual fiscal year 1954	Estimate fiscal year 1955	Estimate fiscal year 1956
Inventory at end of year:			
Gross inventory	$4,783,507	$1,542,507	$1,465,507
Less allowance for loss	1,478,991	434,991	424,991
Net standby inventory	3,304,516	1,107,516	1,040,516
Increase or decrease (−) during year		−2,197,000	−67,000

5. Excess inventory, decrease —$223,000

This inventory covers materials, supplies, and parts which by reason of completions or changes in operating programs or obsolescence become excess to the requirements of the holder, who is usually a contractor under a particular AEC operations office but may, in instances of contract termination or in other minor ways, be held by an AEC office itself. Pending determination as to whether such supplies can be used by other AEC offices and contractors or should be declared surplus, the supplies are carried under the "Excess inventory" account.

The fiscal year 1956 estimate reflects a net decrease of $223,000 in this inventory due principally to planned disposals of excess stores in fiscal year 1956 at the Oak Ridge operations office to the point that inventory balances will be reduced $161,000 by the end of the fiscal year. The remainder of the decrease ($62,000) involves similar but smaller reductions in other operations offices.

The inventory levels are as follows:

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
Inventory at end of year:			
Gross inventory	$7,426,604	$5,545,604	$4,494,604
Less allowance for loss	5,829,990	4,649,990	3,821,990
Net excess inventory	1,596,614	895,614	672,614
Increase or decrease (−) during year		−701,000	−223,000

6. Special reactor materials inventory, increase $12,355,000.

This inventory consists of stocks of materials used in the construction and operation of reactors for production and research purposes. The increase in fiscal year 1956 is related to requirements for stocks to support the operation of the increasing number of such reactors. (Additional information of a classified nature is presented on p. 136.)

7. Other special materials inventory, none.

This inventory includes stocks of materials which have a high monetary value in relation to volume or weight, and which require special accounting controls. Requirements for these materials are estimated to be the same in fiscal year 1956 as in fiscal year 1955, therefore, no additional funds need be appropriated for this inventory account.

The inventory levels are as follows:

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
Inventory at end of year:			
Gold	$182,618	$183,003	$185,217
Silver	44,738	34,132	34,132
Platinum	1,432,851	1,400,106	1,418,681
Radium	2,167,360	1,857,926	1,851,428
Barrier materials	0	3,845,000	3,845,000
Other	30,801	24,201	9,910
Total	3,858,368	7,344,368	7,344,368
Increase or decrease (−) during year	556,201	3,486,000	0

Mr. RABAUT. Here we have an increase of $2,387,000.

Mr. FIELDS. Yes, sir. This is a requirement for additional funds for inventories. The size of the inventories are increasing to serve the new or expanded facilities. If you would look on page 130, I believe you would see the different categories of inventories that we have. All but three of the categories have decreases. The current use inventory includes supplies of materials which are normally used or consumed in the production of source and fissionable materials or weapons and in the current activities under other programs.

Mr. RABAUT. Have you any real reason for having all these inventories for 1954, 1955, and 1956, end with the figures $158?

Mr. FIELDS. No, sir, I believe that is completely coincidental.

Mr. RABAUT. It is odd.

Mr. FIELDS. Yes, sir, that is very curious.

SPECIAL PROCESS SPARE PARTS

On category 2, which is the special process spare parts inventory, these are items related exclusively to the procurement of initial spare parts at new or expanded plants. The largest item in that increase is $2,394,000 for spare parts at Portsmouth. There are some increases and reductions at other locations to bring it to this figure of $2,413,000.

The third category showing an increase of $841,000 is almost completely related to the barrier materials at Oak Ridge.

Mr. RABAUT. Item No. 5.

Mr. FIELDS. Excess inventories are being reduced. The largest increase here in the inventories item is the $12 million item under special reactor materials.

Mr. RABAUT. Explain the cause for that.

Mr. FIELDS. This is almost entirely due to stockpiling.

(Discussion off the record.)

STANDBY INVENTORY

Mr. RABAUT. On page 133, does the decrease on standby inventory reflect less concern over possible disaster or emergency or what is the explanation?

Mr. FIELDS. Mr. Derry, could you answer that? Mr. Derry is the director of construction and supply.

Mr. DERRY. It is a reevaluation of the standby inventory in getting out all of those items that are not absolutely essential for invasion or disaster or fire. This has been continually going down. It also reflects taking out some of the items we had last year in this category, some special process spare parts. The decrease from 1955 to 1956 and from 1954 to 1955, reflects elimination of those items from standby and putting those items into current use. In other words, items that have a use factor have been taken out, leaving only those small items in standby like a stock of butane gas at Los Alamos.

Mr. RABAUT. Off the record.

(Discussion off the record.)

OBSOLETE MATERIALS

Mr. RABAUT. On page 134, it is indicated that approximately $3,821,990 worth of materials will become obsolete or not needed. Though this amount appears to be decreasing, I think it was originally over $5 million yearly, is there any reason why it needs to be this large?

Mr. FIELDS. It is coming down all right. That is the best answer I can give. We are working on it. Why it has been so large I don't know.

(Discussion off the record.)

Mr. RABAUT. In 1954, that was $5,829,990. In 1955, it was $4,649,990. It is estimated to be reduced in 1956 to $3,821,990. The progress is good in so much as it is being reduced, but it is a lot

of money. Who checks up on that, and finds out how much of it is really obsolete, and what could be recaptured from it and so forth?

Mr. FIELDS. Mr. Derry, could you outline the sort of item that is in here in excess inventory?

Mr. RABAUT. Can this be placed on the record as to the inventory? We do not want to know all the details, but what can be done about recapturing some money out of this huge sum that is in nonusable material for the agency?

Mr. DERRY. We do recapture as much as we can, Mr. Chairman. This is excess either by obsolescence or wear and tear.

Mr. RABAUT. Or some new discovery that makes you desire the new thing?

Mr. DERRY. That is quite true; yes, sir. If we can find a way to dispose of this and dispose of it to other Government agencies and get a cash return, we do this. This is part of our handling of excess. If we cannot dispose of our excess inventories within the agency, and we have a pretty good record in this—I think our record on disposal of excess within the agency is around 58 or 55 percent of our excess inventories that we make use of at some other place—we get rid of it to other government agencies to a smaller degree, and if we don't dispose of it there, then we sell it by auction sales or sealed bid sales.

Mr. RABAUT. We really want you to give it a lot of attention. This is a lot of money. It is being reduced and for that you are to be commended, but it still is a large sum of money. There is almost $4 million, and it ought to have a lot of attention.

Mr. DERRY. Yes, sir, we are watching it carefully.

WORKING CAPITAL

Mr. RABAUT. Now we get to working capital. I will insert in the record pages 137 to 143 of the justifications.

(The justification is as follows:)

CHANGES IN WORKING CAPITAL AND OTHER ADJUSTMENTS

Program statement

Estimate fiscal year 1956, reduction	$9, 885, 000
Estimate fiscal year 1955, reduction	17, 780, 842
Increase	7, 895, 842

Changes in working capital and other adjustments are budgeted to reflect the difference between accrued AEC program costs, including changes in inventories, and cash expenditures The credit amounts in 1954 and 1955 represent primarily reductions in fund requirements related to the Commission policy of reducing cash advances to contractors and to an increase in accounts payable related to the increasing level of costs. The credit amount in 1956 continues to reflect an anticipated growth in accounts payable related to the growth in the operating program.

Summary of estimates

Item	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
1. Change in collateral funds	−$14, 250, 000	−$2, 100, 000	−$100, 000
2. Other working capital changes	−33, 896, 104	−13, 664, 842	−10, 953, 000
3. Costs incurred for others	7, 736, 340	8, 310, 000	14, 518, 000
4. Revenues and other income	−11, 544, 121	−17, 318, 604	−19, 008, 166
5. Receipts returned to U. S. Treasury	4, 918, 442	6, 992, 604	5, 658, 166
Total working capital changes and other adjustments	−47, 035, 443	−17, 780, 842	−9, 885, 000

1. Change in collateral funds, —$100,000

These funds, which consist of insurance collateral funds, employee benefit, and annuity funds were established under the provisions of contracts negotiated by the War Department. They were designed to provide for various extraordinary contingencies in the activity of cost-type contractors. For the most part they are held by trustees and invested in United States Government securities. No additional collateral funds have been established in the 3 years under consideration.

The following schedule reflects the status of the collateral funds as of the end of fiscal year 1954 through 1956 by office and contract.

Office and contract	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
Balance at close of year:			
Oak Ridge: Monsanto Chemical Co., employees benefit fund	$1,000,000		
Hanford:			
General Electric insurance fund, Travelers Insurance Co	10,500,000	$10,500,000	$10,500,000
General Electric employees benefit fund	1,000,000		
duPont insurance fund, Travelers Insurance Co	2,100,000	2,100,000	2,100,000
Santa Fe: Los Alamos, University of California employees benefit fund	1,000,000	1,000,000	1,000,000
San Francisco: Berkeley, University of California employees benefit fund	490,000	490,000	490,000
Chicago: University of Chicago employees benefit fund	1,000,000	1,000,000	1,000,000
New York: Columbia University employees benefit fund	800,000	700,000	600,000
Washington: University of California, Los Alamos, and University of Chicago insurance fund, Royal and Globe Co.'s	6,000,000	6,000,000	6,000,000
Total collateral funds	23,890,000	21,790,000	21,690,000
Increase or decrease (−) during year	−14,250,000	−2,100,000	−100,000

2. Other working capital changes, —$10,953,000

The major portion of the decrease in 1956 is attributable to the fact that the amount of liabilities outstanding at the end of the year are expected to increase as the level of the program increases. The excess of liabilities over assets of $82.8 million at June 30, 1956, represents goods and services received prior to that date for which payment must be made in subsequent years.

The details of balances by office are as follows:

Office	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
Balance at close of year:			
Raw materials, Washington	$10,059,512	$15,796,393	$14,854,393
Grand Junction	−4,019,602	−8,700,500	−12,221,800
Oak Ridge	−29,635,291	−46,987,152	−56,893,152
Hanford	−1,058,031	−529,261	−529,261
Savannah River	3,136,060	1,970,089	1,970,089
Santa Fe	7,175,413	−10,971,028	−9,308,033
San Francisco	−2,918,069	−2,492,970	−2,442,970
Chicago	−4,489,345	−3,304,520	−3,404,520
Idaho	728,145	728,145	778,145
Schenectady	−1,859,772	−2,519,425	−2,519,425
New York	−298,993	−310,174	−309,174
Washington offices:			
Military application	152,424	152,424	152,424
Reactor development	−490,810	−490,810	−490,810
Research	1,880,693	1,880,693	1,880,693
Biology and medicine	−1,283,278	−1,283,278	−1,283,278
Headquarters	769,816	510,196	510,574
Other Federal agencies	−36,001,282	−15,266,074	−13,514,147
Total other working capital	−58,152,410	−71,817,252	−82,770,252
Increase or decrease (−) during year	−33,896,104	−13,664,842	−10,953,000

3. Costs incurred for others, $14,518,000

Costs are incurred in performing work or services for private industrial concerns and other Government agencies. All revenues resulting from this work (estimated to be in excess of costs) are applied to reduce the fund requirements of the AEC.

(a) *Research studies and assistance: Fiscal year 1955, $792,000; fiscal year 1956, $3,734,000.*—In connection with the AEC's expanding program for extending cooperation and assistance to industrial companies interested in the development of power reactors, costs will be incurred for the conduct of special studies and irradiations, preparation of technical publications, security investigations of industrial employees, and for the operation of the Reactor Training School at Argonne (this school is also open to foreign nationals). These costs are itemized as follows:

	Fiscal year 1955	Fiscal year 1956
Special studies, 80 percent of charges	$320,000	$1,760,000
Special irradiations, 80 percent of charges	80,000	240,000
Publications	120,000	892,000
Security investigations	23,000	166,000
Reactor Training School, Argonne	249,000	676,000
Total	792,000	3,734,000

(b) *Sale of special reactor materials: Fiscal year 1955, 0; fiscal year 1956, $3,492,000.*—Special reactor materials are used in the construction and operation of reactors. Additional information of a classified nature is presented on page 144.

(c) *Other charges and services: Fiscal year 1955, $7,020,000; fiscal year 1956, $7,020,000.*—Costs are incurred for work and services performed of a more general nature including such items as (1) work performed or facilities provided for vendors at AEC communities, (2) hospital services provided at research hospitals, and (3) cost of safety equipment sold to employees. Estimates for fiscal year 1955 and fiscal year 1956 are based on a straight projection of fiscal year 1954 experiences. These costs are itemized as follows:

	Fiscal year 1955	Fiscal year 1956
Handling and service charges	$2,550,000	$2,550,000
Utility charges	1,650,000	1,650,000
Miscellaneous charges	2,820,000	2,820,000
Total	7,020,000	7,020,000

(d) *Reimbursable work for other agencies: Fiscal year 1955, $498,000: fiscal year 1956, $272,000.*—Miscellaneous work is performed on a reimbursable basis for other Government agencies. The reduction in fiscal year 1956 results primarily from arrangements whereby the Army will assume direct responsibility for the utilities provided at Camp Hanford.

4. Revenues and other income, −$19,008,166

All revenues obtained from work or services performed for others and from miscellaneous sources are applied as a reduction to the total cost of the atomic energy program, thereby reducing appropriation requirements.

(a) *Research studies and assistance: Fiscal year 1955, −$564,000; fiscal year 1956, −$3,062,000.*—Revenues are obtained from industrial companies participating in the AEC's program for extending assistance and cooperation to those companies in developing power reactors. Revenues are derived from conducting special studies and special irradiations, sale of technical publications, conducting security investigations, and tuition at the Reactor Training School, Argonne. These revenues are itemized as follows:

	Fiscal year 1955	Fiscal year 1956
Special studies	$400,000	$2,200,000
Special irradiations	100,000	300,000
Publications	10,000	190,000
Security investigations	0	186,000
Reactor Training School, Argonne	54,000	186,000
Total	564,000	3,062,000

(b) *Sale of special reactor materials: Fiscal year 1955, 0; fiscal year 1956, —$5,432,000.*—Special reactor materials are used in the construction and operation of reactors. Additional information of a classified nature is presented on page 144.

(c) *Other income: Fiscal year 1955, —$10,239,604; fiscal year 1956, —$10,242,166.*—Revenues are derived from royalties on natural resources, interest income from collateral funds, and from work or services of a more general nature including (1) work and facilities provided for vendors at AEC communities, (2) hospital services provided at research hospitals, and (3) sale of safety equipment to employees. These revenues are itemized as follows:

	Fiscal year 1955	Fiscal year 1956
Royalties	$720,000	$780,000
Interest	619,604	562,166
Handling and service charges	2,700,000	2,700,000
Rental and utility charges	2,000,000	2,000,000
Miscellaneous income	4,200,000	4,200,000
Total	10,239,604	10,242,166

(d) *Reimbursable work for other Federal agencies: Fiscal year 1955, —$498,000: fiscal year 1956, —$272,000.*—Reimbursements equal to the cost are obtained from other Government agencies for whom work is performed by the AEC.

5. Receipts returned to United States Treasury, $5,658,166

The following receipts are reflected in the budget as a reduction to costs. Since these receipts are not retained by AEC, funds must be appropriated to offset the amounts returned to the Treasury. An itemization of these receipts is set forth below:

Item	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
Receipts returned to Treasury:			
Sale of ores, Colorado	$396,089	$1,532,000	0
Royalties	654,316	720,000	$780,000
Interest	818,582	619,604	562,166
Miscellaneous sales and charges	1,799,455	1,800,000	1,800,000
Excess community revenues	1,250,000	2,321,000	2,516,000
Total	4,918,442	6,992,604	5,658,166

Mr. RABAUT. You might make a brief statement about this if you desire. This is an increased reduction of $7,895,842.

Mr. MCCARTHY. To arrive at the obligations, Mr. Chairman, we need to consider the changes in assets on hand. As you noted in the beginning of the budget, the obligations for 1956 are estimated at $1,525 million. Our costs, as you note, for 1956 are estimated at $1.4 billion. In order to adjust costs to obligations, we pick up the inventories on hand, and the changes in those inventories in 1956. Then the working capital since that is one of the cash items of the adjustment. What we have here, as you will note on page 137, are five items.

CHANGE IN COLLATERAL FUNDS

The first, of course, is a change in collateral funds. If you will turn to page 138, you will see there these funds which consist of insurance collateral funds, employee benefit and annuity funds established under the provisions of contracts negotiated by the War Department. These funds are outstanding in the hands of these companies and we show in there the change for 1956 over 1955, which is a reduction of $100,000. In other words, the Government will get back $100,000

of those outstanding funds. Those collateral funds were established initially by the War Department, mainly in the form of Government bonds, to protect the insurance companies who have insured the various projects. Those are cash funds which are outstanding and on the termination of these contracts will come back to the Government.

The interest which is earned on them, of course, accrues to the Government. That is one phase of the working capital.

Mr. PHILLIPS. I thought we were going to get more than that. Couldn't you get back more than $100,000?

Mr. MCCARTHY. We got back in 1955 $2,100,000. In 1954 there was returned $14 million. As Mr. Phillips will recall, we attempted to get some of the insurance companies to handle these larger amounts, but without the collateral funds being in the hands of the insurance companies. Without collateral, the cost of insurance would have been much greater to the Government.

Mr. PHILLIPS. Mr. McCarthy is correct in that, Mr. Chairman.

(Discussion off the record.)

Mr. RABAUT. I note that these recede in even amounts. For instance, the New York Columbia University employees benefit fund, in 1954, it was $800,000. In 1955 it was $700,000, and in 1956 it is $600,000.

Mr. MCCARTHY. That is where we made the recapture in 1955 and expect the $100,000 return in 1956. That has been coming down.

Mr. RABAUT. Is this a matter of the number that are protected?

Mr. BURROWS. It is a matter of the experience. We have been negotiating with these people to attempt to get them to reduce the total amount. In the case of Columbia, they feel as more time goes on and they get more experience, they can reduce the amount, but they still feel they need a measure of protection to pay these claims.

Mr. RABAUT. How many companies were asked to consider this?

Mr. BURROWS. Every one of them, sir.

Mr. RABAUT. How much have you recaptured so far?

Mr. BURROWS. As you will notice on the table on page 138, $14 million in 1954, a little over $2 million in 1955, and a little over $100,000 brings us down to the bottom of the barrel.

Mr. RABAUT. It is noted on page 143 that the sale of ores is being discontinued. Will you please explain?

(Discussion off the record.)

UNLIQUIDATED OBLIGATIONS

Mr. RABAUT. Now we turn to unliquidated obligations. That is on page 145. We will insert pages 145 to 148 of the justifications in the record.

(The justification is as follows:)

CHANGES IN OPERATING UNLIQUIDATED OBLIGATIONS

Program statement

Estimate fiscal year 1956, increase	$58, 048, 000
Estimate fiscal year 1955, decrease	186, 876, 402

Unliquidated obligations represent the liabilities of the Commission for balances under contracts and purchase orders outstanding at the end of the year. Appropriations are required to cover increases in the amount outstanding at the end of 1 year over the amount outstanding at the beginning of the year. Prior to the

fiscal year 1955 the majority of contracts for operation of Commission-owned facilities were prefinanced for a full year. Due to a change in policy this advance financing was reduced to 3 months for research facilities and 6 months for production facilities. As a result of this change the appropriation requirement for 1955 was reduced by $228,350,000. However, these savings were offset by increases totaling $41,473,598 required to support the growth in the level of operating programs.

The increase of $58 million in 1956 is required for the following:

[In millions]

Increase for power reactors acceleration program	$40.0
Increase for operation of production facilities as new plants come into operation	7.4
Increase for special research project	4.4
Increase in outstanding orders for materials used in production	7.9
Total increases	59.7
Less net decrease in all other unliquidated obligations	1.7
Net increase	58.0

Summary of estimates

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
Unliquidated obligations at close of year:			
1. Operation of facilities:			
(a) Source and fissionable materials	$357,435,959	$262,105,246	$270,363,500
(b) Weapons	91,608,297	94,483,500	93,644,500
(c) Research and development	134,948,719	74,063,634	76,607,634
(d) Supporting services	4,386,093	2,605,000	2,265,000
Total	588,379,068	433,257,380	442,880,634
2. Major procurement	88,314,982	70,749,655	78,646,655
3. Utility contracts:			
(a) Electric power	18,995,863	24,480,000	27,647,000
(b) Natural gas	7,809,649	7,635,000	7,415,000
Total	26,805,512	32,115,000	35,062,000
4. Other:			
(a) Exploration	1,008,722	919,000	559,720
(b) Research and development	24,684,313	18,280,450	58,388,650
(c) Other	14,961,762	10,485,088	10,068,841
Total	40,654,797	29,684,538	69,017,211
5. Allocated working funds with other Federal agencies	23,794,690	15,266,074	13,514,147
Total unliquidated obligations at close of year	767,949,049	581,072,647	639,120,647
Increase or decrease (−) during year		−186,876,402	58,048,000

JUSTIFICATION OF CHANGES

1. Operation of facilities, increase $9,623,254

The estimates provide for a carryover of not in excess of three months under contracts for the operation of Commission-owned research facilities and not in excess of six months for the operation of production facilities. The changes are as follows:

(a) *Source and fissionable materials, increase $8,258,254.*—The level of operating costs in the major production plants will continue to increase during 1956 and therefore the increase in the unliquidated obligations at the end of the year is required.

(b) *Weapons facilities, decrease, $839,000.*—The major portion of this decrease is in contracts applicable to weapons production reflecting a net reduction in accounts payable.

(c) *Research facilities, increase, $2,544,000.*—There is included in this item, an increase of $4,400,000 for a special research project. This increase is offset in part by a decrease in other research and development programs.

(d) *Supporting services, decrease, $340,000.*—This decrease reflects the reduction in supporting services in line with the reduced activity contemplated in the exploration program.

2. Major procurement, increase, $7,897,000

This increase in unliquidated obligations under contracts for the procurement of uranium ores and other materials used in production is related to the increased rate of deliveries of required materials at the end of 1956. Additional information of a classified nature is presented on page 149.

3. Utility contracts, increase $2,947,000

This category includes the liability for the cost of power with the TVA and private utility companies for furnishing power for plants and the liability under the contract with the East Tennessee Natural Gas Co. for supply of natural gas at Oak Ridge. The estimate reflects an increase primarily due to the increase in monthly power bills for Ohio Valley Electric Co. at Portsmouth.

The decrease of $0.2 million for natural gas reflects the partial amortization of the cancellation liability for special distribution facilities furnished by the contractor.

4. Other, increase $39,332,673

This item includes $40 million for the power reactors acceleration program. It also covers amounts payable under contracts for supplies, miscellaneous off-site research, and unpaid AEC payrolls and travel costs for which a net decrease of $667,337 is estimated.

5. Allocated working funds with other Federal agencies, decrease $1,751,927

In order to present the Commission's budget on a consolidated basis it is necessary to include changes in unliquidated obligations in allocated working funds advanced to other Federal agencies. Of the reduction of $1.8 million, $1 million is applicable to the allocated working fund with the Department of the Army and the balance of $0.8 million in allocated working funds with other agencies.

(Discussion off the record.)

Mr. RABAUT. In this item we had a total in 1954 of $767,949,049. Is that right?

Mr. MCCARTHY. That is right.

Mr. RABAUT. In 1955 you had $581,072,647, and the estimate for 1956 is $639,120,647.

The decrease in 1955 over 1954 is $186,876,402. The $58,048,000 is an increase over 1955 for 1956.

Mr. MCCARTHY. That is correct, sir.

Mr. PHILLIPS. Should you not carry page 139 as an offset on page 146?

Mr. MCCARTHY. Should you carry it on the working capital?

Mr. BURROWS. That would be one way of showing it; yes.

Mr. PHILLIPS. I thought it would be a little more understandable. It is not important. It shows what they are doing with our money, Mr. Chairman.

Mr. MCCARTHY. Mr. Chairman, on page 145 the $58 million which you see in the tabulation is explained here in terms of how the increases occur. You will note that the larger amount is the amount we referred back to this morning which is the $40 million for the power-acceleration program. We estimate there will be an increase of $7.4 million in the operation of production facilities as the level of new plants rise.

The $58 million increase on page 146 is briefed on page 145, showing the principal items which go to make up the $58 million.

Mr. RABAUT. Very well. That consists of 4 items, less the net decrease in 1 item. That brings us up to $58 million.

Mr. MCCARTHY. That is correct, sir.

Mr. RABAUT. Is there anything else you wish to explain here?

Mr. MCCARTHY. I think most of the detail, sir, is spelled out in the explanations of the various items listed therein.

SPECIAL SUPPORTING TABLES

Mr. RABAUT. We will insert in the record at this point pages 150–53 of the justifications.

(The justification is as follows:)

Comparative statement of obligations by object class

Object classification	1954 actual	1955 estimate	1956 estimate	Increase or decrease (−) 1956 over 1955
ATOMIC ENERGY COMMISSION				
01 Personal services	$36,062,431	$37,232,900	$38,202,000	$969,100
02 Travel	2,120,749	2,564,130	3,070,000	505,870
03 Transportation of things	3,916,569	4,465,200	4,976,000	510,800
04 Communication services	2,773,808	2,891,000	2,897,350	6,350
05 Rents and utility services	20,970,274	178,818,079	250,470,522	71,652,443
06 Printing and reproduction	263,060	253,720	252,720	−1,000
07 Other contractual services	588,311,718	417,605,066	829,759,480	412,154,414
Services performed by other agencies	16,995,226	10,898,739	8,053,819	−2,844,920
08 Supplies and materials	179,671,485	233,230,790	361,262,821	128,032,031
11 Grants, subsidies, and contributions	838,393	733,000	733,000	0
13 Refunds, awards, and indemnities	7,400	79,250	65,500	−13,750
15 Taxes and assessments	157,338	176,400	181,250	4,850
Unvouchered	207	100,000	100,000	0
Total AEC obligations	852,088,658	889,048,274	1,500,024,462	610,976,188
Total obligations under allocated working funds with other agencies	37,170,706	24,942,482	25,498,538	556,056
Grand total obligations	889,259,364	913,990,756	1,525,523,000	611,532,244

All programs—AEC direct employment

	Actual, fiscal year 1954	Estimate, fiscal year 1955	Estimate, fiscal year 1956
Average number of permanent civilian employees	6,468.9	6,379.8	6,362.8
Number of permanent civilian employees at end of fiscal year	6,244.0	6,403.0	6,403.0

A basic policy of the AEC is one of conducting the atomic energy programs through contractors with Commission employees performing only those functions that are required in order to protect the Government's interests.

The functions performed by Commission personnel in discharging their responsibilities include:

1. Program planning, contract negotiation, essential liaison with contractors and inspection of contractor products.

2. Security measures involving screening of personnel, protection of documents and property, guarding of security shipments and patroling of sites where contractor guard service is not available.

3. Direct participation in raw materials exploration, domestically and overseas, operation of storage sites, operation of the New Brunswick Laboratory, operation of the Los Alamos communications facilities and the fire and police department and monitoring radiation hazards.

4. Accounting, auditing, property management and personnel services, assuring that adequate controls are maintained by AEC and contractors.

5. Control and dissemination of scientific and technical information to encourage scientific progress.

6. Supporting services required at 10 operations offices and the Washington Headquarters.

Although no change in AEC total employment is projected from June 30, 1955, to June 30, 1956, it is pointed out that:

1. Additional personnel will be required under the source and fissionable materials program and the weapons program for (*a*) protection and control of fissionable materials at new storage sites, and (*b*) protection of an increasing number of security shipments.

2. There will be a continued reduction in year-end strength for program direction and administration, offsetting the projected increase in operating program personnel.

Changes in fiscal year-end employment are shown for each operating program and for program direction and administration and the distribution of full-time civilian personnel by operations office in the following table:

	Fiscal year-end strength		
	June 30, 1954	June 30, 1955	June 30, 1956
OPERATING PROGRAM			
Source and fissionable materials	586	640	651
Weapons	833	1,006	1,050
Reactor development	193	220	220
Research	0	0	0
Biology and medicine	62	62	62
Community	141	153	152
Total operating programs	1,815	2,081	2,135
Program direction and administration	4,429	4,322	4,268
Total all programs	[1] 6,244	6,403	6,403
OPERATIONS OFFICE			
Grand Junction	475	537	542
Hanford	397	364	340
Oak Ridge	963	1,141	1,127
Savannah River	282	256	259
Santa Fe	1,554	1,698	1,727
San Francisco	116	114	111
New York	424	193	193
Idaho	270	289	289
Chicago	282	292	296
Schenectady	69	70	70
Total field	4,832	4,954	4,954
Washington	1,412	1,449	1,449
Total all offices	[1] 6,244	6,403	6,403

[1] The following personnel transferred from contractor to AEC payrolls during fiscal year 1955 are included in the June 30, 1954, employment for comparability purposes:

Chicago patent group	19
Technical Information Service, Oak Ridge Extension, personnel assigned to weapons program	36
Raw materials exploration personnel, Grand Junction	66

PERSONAL SERVICES

Mr. RABAUT. On page 151, your justification reflects that you expect to end the coming fiscal year with exactly the same number of employees that you will have at the end of this year. I note, however, that your average number of employees is reduced by 17.

Mr. PHILLIPS. One is bodies and one is man-days.

Mr. RABAUT. On page 152 it indicates a shifting from program to program. Does the fact that you end up the year with exactly the same number of employees suggest that some employees are being retained who may not be needed?

Mr. MCCARTHY. No, sir. If you will refer to page 152, you will see that program direction and administration is slated to be lower at the end of 1956 than the ending in 1955, while other programs up above will increase.

One of the principal reasons is in the weapons program where we will have some additional security shipments.

Mr. FIELDS. I think the numbers come out the same because of a deliberate effort to hold down our force. We do not want to expand any more than is necessary.

Mr. RABAUT. Do you have any reallocations or in-grade promotions?

Mr. FIELDS. We have in-grade promotions.

Mr. RABAUT. Isn't it odd that you have the same number? How much money do you have for in-grade promotions?

Mr. PHILLIPS. There is an increase of almost a million dollars.

Mr. RABAUT. How much is the increase for employee help?

Mr. FIELDS. It is almost a million dollars.

Mr. RABAUT. Is that all for in-grade promotions or is that the total amount for help?

Mr. MCCARTHY. $38,202,000 is the total amount.

Mr. RABAUT. How much is the increase?

Mr. MCCARTHY. It is an increase of roughly a million dollars in total.

Mr. RABAUT. That million dollars, if you are retaining the same number of employees, is for in-grade promotions.

Mr. FIELDS. Yes, sir.

Mr. RABAUT. How many people are involved?

Mr. MCCARTHY. 6,403.

Mr. RABAUT. Is that about correct?

Mr. MCCARTHY. Actually we have estimated a lower man-year figure.

PROPOSED LANGUAGE CHANGES

Mr. RABAUT. Let us turn to pages 13, 14 and 15. These will be inserted in the record.

JUSTIFICATION FOR PROPOSED LANGUAGE CHANGES—OPERATING EXPENSES

Proposed changes in language are indicated as follows:

Language enclosed in black brackets indicates proposed deletions and italic indicates proposed insertion of new language.

1. "For necessary operating expenses of the Commission in carrying out the purposes of the Atomic Energy Act of [1946] *1954*"

Change made to reflect passage of new act approved August 30, 1954.

2. "not to exceed [$2,564,130] *$3,070,000* for expenses of travel;"

This change is in line with the estimated requirements in fiscal year 1956 for expenses of travel as set forth in the detailed estimates.

3. "not to exceed [$37,232,900] *$38,202,000* for personal services;"

This change is in line with the estimated requirements in fiscal year 1956 for personal services as set forth in the detailed estimates.

4. "[$1,098,962,300] *$1,045,000,000* together with *$220,804,000 to be transferred from prior year appropriations under the head 'Plant and Equipment,' and*"

As of June 30, 1955, there are estimated to be, under the appropriation for "Plant and equipment," funds in excess of the 1956 requirements for the plant and equipment program. The appropriation for plant and equipment is available until expended and in order to reduce the overall appropriation requirements of the Commission new language is being inserted which will provide for the transfer of these funds to the appropriation for "Operating expenses," thereby reducing the appropriation estimate for operating expenses from $1,265,804,000 to the $1,045,000,000 requested.

5. "together with the unexpended balances, as of June 30, [1954] *1955*, of prior year appropriations made available under this head to the Atomic Energy Commission:"

To continue in fiscal year 1956 the provision in effect since fiscal year 1950.

6. [*"Provided further*, That no part of this appropriation shall be used to pay the salary of any officer or employee (except such officers and employees whose

compensation is fixed by law, and scientific and technical personnel) whose position would be subject to the Classification Act of 1949, as amended, if such Act were applicable to such position, at a rate in excess of the rate payable under such Act for positions of equivalent difficulty or responsibility:"]

To delete this provision from the appropriation language as it has been incorporated as permanent legislation in the Atomic Energy Act of 1954 (sec. 161d).

JUSTIFICATION FOR PROPOSED LANGUAGE CHANGES—ADMINISTRATIVE PROVISIONS

1. Deletion of provisions regarding the letting of contracts without advertising unless provisions are made for audits by the Comptroller General.

To delete these provisions from the appropriation language as they have been incorporated as permanent legislation in the Atomic Energy Act of 1954 (sec. 166).

2. "Any appropriation available under this Act or heretofore made to the Atomic Energy Commission may initially be used subject to limitations in this Act during the fiscal year [1955] *1956* to finance the procurement of materials, services, or other costs * * *"

To continue in fiscal year 1956 the provision in effect since fiscal year 1953

Mr. RABAUT. This involves proposed language changes.

Mr. MCCARTHY. Do you want me to run down the list?

Mr. RABAUT. Yes.

Mr. MCCARTHY. Item 1 is just a correction to bring the new Atomic Energy Act into the opening sentence. That is changing the Atomic Energy Act from 1946 to 1954.

Mr. RABAUT. Very well.

Mr. MCCARTHY. The next item, No. 2, is the limitation on the expenses of all travel in which the amount would be $3,070,000 as opposed to the limitation this year of $2,564,130.

Mr. RABAUT. What is the reason for the change?

Mr. MCCARTHY. The total travel will increase because of additional security shipments during 1956 as opposed to 1954.

Mr. RABAUT. Due to the increased volume of business?

Mr. MCCARTHY. Yes, sir.

Mr. RABAUT. Is it going to take that much money for it?

Mr. MCCARTHY. Yes, sir.

Mr. RABAUT. You don't think the committee ought to even take a look at that?

Mr. MCCARTHY. The next item, No. 3, is the dollar limitation on the amounts for personal services and there, of course, is the $38,202,000 which we had been discussing as the personnel limitation.

Mr. RABAUT. No. 4.

Mr. MCCARTHY. Item No. 4 is the language which would provide for the transfer of $220,804,000 from plant and equipment to the operating expense appropriation.

Mr. RABAUT. That is the $220 million that we were talking about.

Mr. MCCARTHY. Yes, sir.

Mr. RABAUT. Item No. 5.

Mr. MCCARTHY. Item No. 5 is to carry forward a provision presently in the act which cites the appropriation together with the unexpended balances as of June 30, 1955. In other words, change the 1954 to 1955.

Mr. RABAUT. That is just to reflect a new year.

Mr. MCCARTHY. Yes, sir. Item No. 6 is to delete a provision that has been in the appropriation act relative to the limitation on salaries which is now contained in the Atomic Energy Act of 1954. It is already in the basic act as section 161 (d).

Mr. RABAUT. How long has it been in the other act?

Mr. McCarthy. The section is picked up exactly the same. It is verbatim in the Atomic Energy Act of 1954. This has been carried in the appropriation act since 1948.

Mr. Fields. The act was passed after the appropriation act of last year.

Mr. McCarthy. On the next page, 15, there are 2 provisions, the first to delete the provision regarding the requirement for audit of AEC contracts by the Comptroller General. This again has been picked up in the basic Atomic Energy Act of 1954 as section 166. It was picked up exactly from the appropriation act.

Mr. Rabaut. Verbatim?

Mr. McCarthy. Yes, sir. Item No. 2 is to change the date from 1955 to 1956, in a provision presently in the appropriation act, which provides that either fund may be used initially to finance the procurement of materials or services, and to be adjusted on the basis of cost between appropriations. That is between the operating expense appropriation and the plant and equipment appropriation. This has been carried for a number of years in the appropriation act.

Mr. Rabaut. It has been carried in the appropriation act?

Mr. McCarthy. Yes. This is just a change in the date.

Mr. Rabaut. Very well.

Mr. Phillips. There is one other that we have not covered, Mr. Chairman. What happened to the 5 percent transferability?

Mr. McCarthy. That is proposed in here without change.

Mr. Phillips. The clerk points out to me it is on page 135 on the committee print of the bill.

Mr. Rabaut. Are there any other changes that you failed to mention?

Mr. McCarthy. No, sir, there are no other changes.

GAO REPORT ON AEC REPORTING OF OBLIGATIONS

Mr. Rabaut. Now, referring to the report by the General Accounting Office, to which I have referred before, under the caption on the last page or page 172 of the report, "Reporting of Obligations":

> The Atomic Energy Commission spends about 3½ percent of its appropriations directly, the balance being spent by cost-type contractors. Each year the contractors are notified of a fixed ceiling which they cannot exceed. Records are maintained by the contractors and each month end the contractor furnishes Atomic Energy Commission with its unpaid commitments. However, Atomic Energy Commission reports as an obligation the fixed ceiling applicable to each contractor in the month in which the ceiling is established.
>
> This practice does not appear to conform to the requirements of section 1311 of Public Law 663, approved August 26, 1954, and it is recommended that Atomic Energy Commission change its method of reporting to the Congress and the Bureau of the Budget by substituting contractor's obligations in lieu of contractor's ceilings. Unused contractor's ceilings could be shown as a footnote.

That is more or less technical but they want you to have contractor's obligations instead of contractor's ceilings. In other words, your records should show the difference. Have you had notice of this before?

Mr. McCarthy. No, this is one I had not heard about, Mr. Chairman. After the General Accounting Office made its survey last year of our obligations under section 1311 there were some very minor things they reported to us on, but this is the first inkling we had of their thoughts on this.

Mr. RABAUT. You might prepare an answer to it for insertion in the record, and say what you think you can do about the suggestion.

Mr. MCCARTHY. Yes, sir.

(The information referred to follows:)

STATEMENT RELATIVE TO COMMENTS OF THE GENERAL ACCOUNTING OFFICE ON METHOD OF OBLIGATING COST-REIMBURSEMENT CONTRACT

The Commission obligates funds under cost-plus-fixed-fee contracts on the basis of amounts written into the contract or as determined under the provisions of the contract. For construction projects, the amount represents the total estimated cost of the work to be performed by the contractor. For the operation of Commission-owned facilities the amount represents the maximum liability of the Government during a specific period, usually 1 year, and each year the contract is supplemented so as to write into the contract, or otherwise fix, the maximum fund liability of the Government for the year.

Budget-Treasury Regulation No. 1 provides under the section dealing with the concept of obligations to be reported as follows:

"(4) Cost-plus-fixed-fee and other types of contracts without a fixed price.—Include obligations on the basis of the total estimated cost of contracts (including the total fixed fee, if any) *This figure shall be reported for the month during which the contract is let* and subsequent adjustments upward or downward in the estimated cost (or the fixed fee, if any) shall be reflected in subsequent reports." [Italic supplied.]

It is our understanding that section 1311 of Public Law 663, 83d Congress (Supplemental Appropriation Act, 1955) did not change the provisions of Budget-Treasury Regulation No. 1, but was directed to assuring that obligations to be recorded must, among other things, be supported by a binding agreement in writing between the parties. As amounts obligated by the Commission are covered in contracts signed by both parties, the recording in the month the contract is signed meets both the criteria of section 1311 of Public Law 663 and Budget Treasury Regulation No. 1.

Furthermore, to avoid violating the provisions of section 3679 of the Revised Statutes (Antideficiency Act), funds should be obligated for the estimated amount of a construction project when we enter into a project and for the operation of our plants when we agree to commit the Government to a specific amount under a contract.

Although the Commission has been operating for some years on this basis and the General Accounting Office has just recently completed a survey of our unpaid obligations at the end of fiscal year 1954 to determine their propriety under section 1311, we have not previously been informed by the General Accounting Office of any criticism of our present practice.

Mr. MCCARTHY. In most cases, in fact practically all cases that I know of, the contracts with our contractors have a stated amount of obligation in them. To that extent they are recorded as obligations on the books of the Commission. I fail to understand what they mean by reporting unpaid commitments on the part of the contractor, because our contracts do have stated amounts in them.

Mr. RABAUT. Yes, but they seem to predicate it on the idea that whatever the rate of the contract, they take the ceiling for that period and keep on dealing with that ceiling, rather than what they should have on a month-to-month basis showing what the difference would be between what they have performed and what the balance would be on the ceiling.

Mr. MCCARTHY. This we know.

Mr. RABAUT. They suggest that the unused contractor's ceiling could be shown as a footnote.

Mr. MCCARTHY. We would like some time to study this and make a reply.

Mr. RABAUT. We would be glad to have you look it over and put yourself on the record about it.

Mr. MCCARTHY. Yes, sir.

NUMBER OF AIRCRAFT

Mr. RABAUT. How many airplanes do you have?

Mr. DERRY. We are budgeting for 20 planes in 1956. We have currently 17 airplanes; 14 of these are on the Colorado Plateau for exploration for mining ore. The others are at Hanford for security.

Mr. RABAUT. You might supply for the record what kind of planes they are.

(The information referred to follows:)

Aircraft

Location	To be acquired fiscal year 1956	Total on hand June 30, 1956	Type	Estimated costs
Hanford	0	[1] 4	3 Piper Cub type, at $6,000 1 Twin-engine Beechcraft, at $89,000.	$18,000 89,000
Grand Junction	3	[2] 16	Piper Cub type, at $6,000	96,000
Total	3	20		203,000

[1] Used for security patrol.
[2] Airborne Gamma radiation surveys and geologic reconnaissance.

NUMBER OF AUTOMOTIVE VEHICLES

Mr. RABAUT. How many automobiles have you?

Mr. DERRY. We expect to have 8,222, I believe. We have 8,400 now. This is all automotive vehicles, as well as trucks.

Mr. RABAUT. You are not asking for any automobiles this year?

Mr. DERRY. We are not asking for any additions at all in this appropriation. In the plant and equipment appropriation, we are only asking for replacement vehicles.

Mr. RABAUT. Is that in the plant and equipment appropriation justification?

Mr. MCCARTHY. It is all in the plant and equipment appropriation.

Mr. RABAUT. That is in the bill to come up.

Mr. MCCARTHY. Yes, sir.

NUMBER OF AIRCRAFT

Mr. RABAUT. How many planes are you asking for in there?

Mr. MCCARTHY. Three airplanes, I believe, sir, to supplement the planes in the Colorado Plateau.

(Discussion off the record.)

Mr. JOHNSON. These planes are used in connection with exploration for uranium on the Colorado Plateau. The technique of using radio detection equipment in the airplane was developed by the Commission starting in a small way back in 1948–49. It has been highly successful. It has been responsible for the private companies now using airplane exploration as one of the major tools in exploration. It is also credited with probably finding one of the largest deposits we have in the western part of the United States, as well as numerous small deposits. The Commission is now using them for geological work in supporting the ground forces in general geology and the reports are furnished the public.

Mr. RABAUT. Are you using any helicopters?

Mr. JOHNSON. I don't believe so. We had a contract with a helicopter company several years ago, but for the high altitudes they are not successful.

Mr. RABAUT. Do you feel that the expense of the ownership of all these planes is really paying dividends, when we hear about the number of amateur prospectors that are out there?

Mr. JOHNSON. The amateur prospectors are not the ones that are using this.

Mr. RABAUT. I know they are not using them, but they are picking up some stuff.

Mr. JOHNSON. That is right.

Mr. RABAUT. We are glad they are, but here we are with a big investment.

Mr. JOHNSON. These are small Piper Cub planes. I think they are about of the order of $5,000 a plane.

Mr. RABAUT. Then we have $100,000 worth of planes roughly.

Mr. JOHNSON. In our work we have about 11 in service.

Mr. DERRY. You have 14 in service. You will have 14. You have 11 in service now.

Mr. JOHNSON. It would be my view that the number of planes should be reduced to that of purely geological work. I look forward to the reduction of the amount of flying that we have been doing, but it is a very important tool in doing the geological mapping, the type that the survey has been making for years, of getting the general geology of the country, measuring our resources, and that is the type of work the Commission should continue, both for the support of the ground geological work and also to further the development of the methods of exploration.

NUMBER OF AUTOMOBILES

Mr. RABAUT. What uses are the automobiles put to? I know there are many uses, but what are they used for? Are there any special uses that you have? What type of automobiles do you have?

Mr. DERRY. We have all types, including all kinds of trucks, from jeeps to heavy-construction trucks, and ton-and-a-half trucks and then we have automotive vehicles. These are all used by our contractors. A small number are used by us and by the AEC staff in the operations offices, generally operated on a pool basis.

Mr. RABAUT. How many passenger cars do you believe you have?

Mr. DERRY. I can give you that in just a moment, sir. We have around 2,081 automobiles on hand.

Mr. RABAUT. What type cars are those?

Mr. DERRY. Those are automobiles. We have 100 station wagons, 67 ambulances, 574 buses, making a total of 2,822.

Mr. RABAUT. What do you do with those station wagons?

Mr. DERRY. Haul personnel, as many as we can haul on them, making greater utilization of our cars.

Mr. RABAUT. You use them for multipurposes.

Mr. DERRY. Yes. Here in town we have two station wagons that operate for a dual purpose, in hauling personnel between our buildings and hauling mail.

Mr. RABAUT. You have your name on them?

Mr. DERRY. Yes, sir.

Mr. RABAUT. Are there any other points that we have here? If not, in conclusion, I would like to say that no one could sit here with you for the time that we have been with you and fail to realize your your fine devotion to your job and your ambition to be of service to a marked degree to your country and to humanity with the ultimate objective of trying to keep peace in the world just by the fact that you are the developers of the "Big Stick" for Uncle Sam. I congratulate you on your devotion to your duty.

Mr. FIELDS. Thank you.

Dr. LIBBY. I wish to express our gratitude to you for your thoughtful, expeditious, and kindly attention to our case. We will be pleased to furnish additional information if you should want it. Whatever your decision may be, it has been very pleasant to meet you and to tell you of our plans.

Mr. RABAUT. I am not speaking for myself, but for every member of the committee.

Mr. PHILLIPS. You speak for all of us.

Mr. JENSEN. You speak for all of us, Mr. Chairman.

Mr. RABAUT. We hope you will continue your devotion to this task and keep track of the huge amount of money that is entrusted to your care for the protection of our country and the development of atomic energy.

FRIDAY, MAY 27, 1955.

TVA FERTILIZER PROGRAM

WITNESS

RICHARD E. BENNETT, PRESIDENT, FARM FERTILIZERS, INC., OF OMAHA, NEBR., AND PRESIDENT OF BENNETT CHEMICAL CO., OF DENVER, COLO.

Mr. RABAUT. The committee will come to order, please.

You will identify yourself for the record and the committee will be pleased to hear you at this time.

GENERAL STATEMENT

Mr. BENNETT. My name is Richard E. Bennett. I am president of Farm Fertilizers, Inc., of Omaha, Nebr., and I am also president of Bennett Chemical Co., of Denver, Colo.

Farm Fertilizers, Inc., manufactures high analysis pelleted commercial fertilizers and also manfactures superphosphate.

Bennett Chemical Co. only manufactures diammonium phosphate. Diammonium phosphate is a high analysis chemical compound containing 21 percent nitrogen and 53 percent available phosphoric acid. Bennett Chemical Co. completed the installation of equipment for the manufacture of diammonium phosphate in July of 1954. Our first shipments of this material were made in late August or early September of 1954.

So far as I know, diammonium phosphate is produced by 1 company in Michigan, 1 company in Illinois, 2 companies in Colorado and 2 companies in California and is now being produced by the Tennessee Valley Authority at Sheffield, Ala.

When I heard in January of this year that the TVA was planning to go into production of diammonium phosphate on a commercial scale, and sell at a price which was ruinous to private industry, I called to the attention of the TVA that in my opinion there was no need for TVA to expand their facilities in order to manufacture this product which they had not manufactured before. I called to their attention that six private plants were already in production and had capacities to produce much more of this material than there was a market for. I asked for the opportunity to meet with the officials of TVA and talk this matter over with them, because I knew that if they went ahead with these plans at the prices which had been mentioned, it would mean Bennett Chemical Co. would be ruined and would have to discontinue the production of this product and go out of business.

I met with a representative group of TVA officials from Knoxville and from Sheffield in February. I was told then by them that their decision to manufacture this product had not yet been firmly set and that their policy and prices were still to be determined.

At this meeting representatives from Colorado Fuel & Iron Co., who are one of the manufacturers of diammonium phosphate, along with my son, who manages Bennett Chemical Co., and myself, brought to the attention of the TVA that the needs for diammonium phosphate were now being met by private industry, that the entering into this new production by TVA was not needed on an experimental basis, an educational basis or on any other basis because industry was prepared to furnish this product at reasonable prices and to develop the market through agricultural colleges, county agents, and thousands of dealers and farmers, so that the agronomic advantages in the use of this product would be fully demonstrated.

We also called to the attention of the TVA at this meeting that if they produced and sold diammonium phosphate at the prices we had heard mentioned, it would be absolutely ruinous to us and would discourage rather than encourage the production of this material by private industry. I told TVA that Bennett Chemical Co. would definitely be ruined if they took this step. At this meeting the TVA men practically told us that our costs were too high and that no one had a place in the industry, unless they manufactured their own phosphoric acid and their own anhydrous ammonia, at the same location where they were manufacturing diammonium phosphate. I called to the attention of the TVA representatives at this meeting, that if this was the case, then 95 percent or more of private industry in all lines had no business being in business, because there was only a very small percent of any manufacturers who process all of their raw materials and pay no freight on any of them.

Since this meeting in February, TVA has received protests probably running into the hundreds from Congressmen, Senators, fertilizer manufacturers, trade associations, the Hoover Commission, the Bureau of the Budget, Secretary of Agriculture Benson, and Secretary of Commerce Weeks, protesting their entering into the manufacture of this new material. These protests have called to the attention of the TVA that this is the first time TVA has ever manufactured a fertilizer which contains both nitrogen and phosphorus. These protests have called to the attention of TVA that industry knows how to produce diammonium phosphate and that sufficient agronomic

research has been carried out to demonstrate its usefulness on crops. These protests have said that TVA's entering into this production would discourage this development by private industry.

At a recent meeting of the Nebraska Fertilizer Institute, which is composed of a large number of fertilizer dealers and a small number of fertilizer manufacturers formed for the purpose of promoting fertilizer use in the State of Nebraska, a resolution was unanimously passed that in producing diammonium phosphate on a commercial basis, the TVA was establishing a very serious precedent in the fertilizer industry and was hurting the industry rather than helping same. It was unanimously voted that the organization do everything in their power to bring to the attention of our Government the serious mistake that was being made in permitting TVA to go into further active competition with private enterprise.

To all of these protests, TVA has turned a deaf ear and apparently they are determined to go ahead with this project in spite of these many protests.

TVA says that their distribution is for experimental and educational purposes and that the requirements which they place on the distribution and use of their fertilizers confine them to educational and demonstration programs and avoid direct competition with commercial producers. This is just so much applesauce or bunk. They are very substantial producers of phosphorus and nitrogen bearing materials in direct competition with private enterprise at a price at which private enterprise cannot compete and they are doing this at the cost of the taxpayers.

On page 2 of the TVA release in reference to diammonium phospheta, they plead that they are only a small part of the national production—one and a half percent of the tonnage and 3 percent of the plant nutrients in fiscal year 1954. The uninformed would probably take these figures at face value, but let us look at the record. They carefully point out at the top of page 3 that industry is now supplying about 900,000 tons of concentrated superphosphate. In a little booklet reprinting an article by Gordon Clapp, then Chairman of the Board of TVA, he states that in 1951 TVA produced 11,800 tons of various forms of concentrated superphosphate; so of the total, TVA was producing almost 20 percent. On the same page of the article about diammonium phosphate, they state that farmers used about 650,000 tons of ammonium nitrate, exclusive of the amount supplied by TVA. In Gordon Clapp's report for 1951, he shows a production of 136,000 tons of ammonium nitrate, again about 20 percent of that particular material; so TVA is no small enterprise.

TVA has now started the production of diammonium phosphate in competition with existing private plants. They state that the production of these private enterprise plants in 1955 will be about 30,000 or 40,000 tons, and yet they have modified their own facilities to produce a capacity of 40,000 tons annually. When this capacity is utilized, TVA will be producing 50 percent or more of the entire domestic diammonium phosphate production. Amounts of this magnitude hardly can be considered experimental or educational.

TVA also says that there is a potential market of "several hundred thousand tons annually." I do not agree with this so far as anything in the foreseeable future is concerned. No one can say what the market for this material might be 10, 15, or 20 years from now, but the market

for this material at this time is very limited. I feel rather sure that 12,000 tons of diammonium phosphate a year is approximately what private industry is now selling. The potential market is considerably more than the present market, but to mention a figure of "several hundred thousand tons yearly" is in my opinion fantastic.

I feel that the fertilizer industry can develop this market in a very satisfactory manner if they are not faced with this ruinous competition from TVA. This TVA competition is a hindrance to us and is in no manner a help. TVA is selling diammonium phosphate in bulk at $103.32 per ton f. o. b. Sheffield, Ala. This is just about exactly the cost to the private producers of the ingredients involved, providing the private producers have no freight to pay on either the phosphoric acid or the anhydrous ammonia. There are no locations in the United States where a private manufacturer can buy the two ingredients, which are phosphoric acid and anhydrous ammonia, without paying freight on one or the other of the materials. This means definitely that TVA is selling diammonium phosphate for less than any manufacturer can purchase the raw materials, to say nothing of the many other items of cost which enter into the manufacture of this product.

Our present selling price on diammonium phosphate in bags delivered to dealers is $146 per ton. TVA's price for this same material to distributors delivered all through the several States that we cover, is from $20 to $25 per ton under ours and we pay taxes. TVA says that diammonium phosphate can be produced by a commercial producer and sold at a price of $120 per ton, at a profit. We say and can prove without question, that no commercial producer of diammonium phosphate can sell at a price of $120 per ton and make a profit.

I am submitting to you a chart showing the TVA prices for diammonium phosphate delivered to various points in several States which our company serves. I have shown our costs of producing this material at both Denver, Colo., and Omaha, Nebr. These figures show that in all cases TVA is delivering their diammonium phosphate to all points in our territory at from $16.68 per ton to $3.10 per ton under our costs. Again I say that their prices undersell us by from $20 to $25 per ton under the prices we must have in order to stay in business and that these prices if continued will break Bennett Chemical Co., of Denver, Colo., and will keep Farm Fertilizers, Inc., of Omaha, from manufacturing diammonium phosphate in Omaha and will discourage private enterprise from entering into the production of this fine material, rather than encourage them, as TVA says.

I feel that the fertilizer industry can develop this market in a very satisfactory manner, if they are not faced with this ruinous competition from TVA. Again I say that TVA competition is a hindrance to us and is not a help.

I think the views of the American people are in favor of less competition in business from Government agencies and that Congress should take action to get the Government out of competitive business and should definitely not permit it to enter new business fields.

I very much appreciate this opportunity to appear before you to present my views and the views of our industry.

If you have any questions, I shall be very glad to try to answer them.

Mr. RABAUT. I have a copy of your statement. The chart is attached.

Mr. BENNETT. Yes, sir.

Mr. RABAUT. It will be included in the record at this point. (The chart referred to follows):

Diammonium phosphate

F. o. b.	TVA selling prices		Raw material costs for making 1 ton diammonium phosphate	Bennett Chemical Co. costs without selling expense production at Denver		Bennett Chemical Co. costs without selling expense production at Omaha		Amount under our costs of TVA selling price	
	Bulk	Bagged		Bulk	Bagged	Bulk	Bagged	Bulk	Bagged
Sheffield, Ala	$103.32	$110.49							
Omaha, Nebr	116.20	123.37	$112.95			$122.47	$126.47	$6.27	$3.10
Grand Island, Nebr	117.12	124.29				126.01	130.01	8.89	5.72
Norfolk, Nebr	116.89	124.06				125.62	129.62	8.73	5.55
Des Moines, Iowa	115.28	122.45				126.01	130.01	10.73	7.56
Sioux City, Iowa	116.66	123.83				125.35	129.35	8.69	5.52
Denver, Colo	120.11	127.28	120.00	$129.52	$133.52			9.41	6.24
Kansas City, Mo	115.05	122.22				126.83	130.83	11.78	8.61
Chicago, Ill	115.28	122.45				131.96	135.96	16.68	13.51
Theoretical location with no freight on raw materials			102.95						

Mr. RABAUT. How long have you been making this diammonium phosphate?

Mr. BENNETT. We started making this in July of 1954, and our first shipments were toward the end of August or maybe the first few days of September of 1954.

Mr. RABAUT. According to your knowledge, when did TVA start making this?

Mr. BENNETT. TVA made no shipments of diammonium phosphate until April of 1955.

Mr. RABAUT. How long have they been working on it?

Mr. BENNETT. I have no knowledge of that.

Mr. RABAUT. When they make a product, do they put it out through the agencies in the counties with an idea that that agency will get the use of this known to the farmers with the idea that eventually there will be a demand for it and TVA does not want to have the business when it gets into the demand stage? If this is as new as last year, you certainly cannot have very much demand for it already.

Mr. BENNETT. Mr. Rabaut, a fertilizer with 1 part of nitrogen and 2½ parts of phosphorus or a ratio of 1 to 2½ is not an experiment. This is simply the same ratio as other fertilizers but a higher analysis.

Mr. RABAUT. That is all true, but nevertheless it is new. Diammonium phosphate is new. As you say yourself, you are only making it since last year.

I am going to make a check into this as chairman of this committee, but the idea of TVA making it is to get the product known, which would eventually be very beneficial to those in the industry. They would have a much better opportunity to make it known than anybody else would, for the simple reason that you said yourself, that they put it out in quite a quantity but not in much of a quantity to any one person. It is the question of making this kind of operation made known. That is all it is for.

The quantity that we have listed here is 20,000 tons. They corrected the record themselves from 43,000 to 20,000. That is the only reason

for doing it. We have it on the record that they have no ambition to go in competition in the fertilizer industry at all. What they want to do is get fertilizers known and to tell of the type of soil where certain fertilizers can be best used. With the experience gained from the distribution of it in various parts of the country under the system they have, it will create a demand for that fertilizer which then goes to the fertilizer industry. It is not that it will put the fertilizer industry out of business at all.

Mr. BENNETT. May I say something about the system which they say they have in their printed matter and which they actually have?

Mr. RABAUT. I am talking about the system they have to come up to the Congress of the United States and declare to us. This is their declaration to us. We cannot very well take a whole group of men and say they come up here and deliberately not tell us the truth.

Mr. BENNETT. In actual practice when they sell diammonium phosphate the dealers that get this product buy it and sell it in direct competition with us, with no strings attached in any way, shape, or form.

I might also add that Victor Chemical Co. has been making diammonium phosphate in Chicago for several years. Monsanto Chemical Co. has been making diammonium phosphate in, I think, Sterling, Mich., for some 4 or 5 years. So diammonium phosphate has been made by 2 producers for some 4 or 5 years.

Mr. RABAUT. How much of it has been sold? That is the point. The point is to try to get it into use. If we can have it more generalized a new demand will arise. You would not be making it if it was not good. So it is probably very good. I am very pleased to see somebody of your type come in here and say you are making it but I think you are misjudging their purposes. All they are trying to do is build up a business for the people that are going to make this. They do not want to stay in the fertilizer business. They will have some new type of fertilizer after this.

COST OF DIAMMONIUM PHOSPHATE

We have a letter here where they claim they can make it and sell it for $120.09.

Mr. BENNETT. I know they say that in their printed matter.

Mr. RABAUT. I have a letter to TVA from a manufacturer. At their Maryland Heights, Mo., plant they claim they can make it for $120.09.

Mr. PHILLIPS. Delivered f. o. b. where?

Mr. RABAUT. At the plant.

Mr. PHILLIPS. That is not clear. Is that the price at which they sell it?

Mr. RABAUT. Yours at Kansas City is $130.83.

Mr. BENNETT. That is right.

Mr. PHILLIPS. Per bag?

Mr. BENNETT. Yes, sir.

Mr. RABAUT. TVA is $122.22 at Kansas City. Sheffield, Ala., they have it down to $110.49.

Mr. BENNETT. That is right.

Mr. RABAUT. This is the chart that accompanied your own letter?

Mr. BENNETT. That is right.

Mr. RABAUT. I do not think there is any idea—and I am making no defense because everybody has a perfect right to come in and talk about their business—I think it is for the purpose of assisting the business. I do not think it is for any other purpose. I will be very glad to yield to my colleague. I know the gentleman is from his State.

Mr. JENSEN. No; Mr. Bennett is across the river from my district. Of course, like anybody else we are interested in seeing to it that private industry gets a fair break. I think the thing that is disturbing Mr. Bennett and the other manufacturers of diammonium phosphate is the fact that they feel TVA, Mr. Chairman, is proposing to produce more of this fertilizer than can be justified. They, in a letter which I saw from TVA, said they planned to produce 30 to 40 thousand tons a year.

The thing that concerns the private companies that produce diammonium phosphate in this case is the fact that TVA has told them, and in fact they had in our justification, that they planned to manufacture 43,000 tons.

Mr. RABAUT. It is corrected to 20,000 tons.

Mr. JENSEN. Yes; after we talked to them.

Mr. Bennett, as the chairman says, it has been reduced to 20,000 tons.

This is the point that is important in this matter. Of course, you know that the Members of Congress have been very anxious to have TVA develop a lot of different kinds of fertilizer and I think they have done a good job, generally speaking. I told them so. While they were doing that, private industry was also developing fertilizers. They have been working together. I think you have to say in all fairness to TVA that they have made their experiments and their developments available to private industry. So at least we have to give them credit where credit is due.

The thing that I—and I think the committee would like to know, is this, Mr. Bennett: Do you and private industry feel that diammonium phosphate fertilizer has now been completely developed to as near perfection as is possible to do?

Mr. BENNETT. I think that as far as the manufacture of diammonium phosphate is concerned, no additional research is necessary. As far as the use of diammonium phosphate on various crops in various sections is concerned, I think there is still more experimental work to be done which we are doing continually through our dealers, through the county agents, through the State agricultural colleges, and through literally hundreds of farmers.

QUANTITY OF DIAMMONIUM PHOSPHATE PRODUCED

Mr. JENSEN. How many tons of diammonium phosphate did private industry produce in the calendar year or fiscal year that has just passed?

Mr. BENNETT. I would say that in what we call the calendar year for the fertilizer industry, which ends on June 30 of 1955, that 12,000 tons of diammonium phosphate is approximately what private industry has produced.

Mr. JENSEN. What do you think private industry will produce this year?

Mr. BENNETT. In the year starting July 1, 1955, I look for our company to go from 4,000 tons to 8,000 tons. So we expect to double our production. That is, our sales. Our production is plenty large enough. We have production facilities to make 15 to 18 thousand tons a year easily.

Mr. JENSEN. How about the other companies?

Mr. BENNETT. There are production facilities on the part of these companies who are now in production to produce 100,000 tons of diammonium phosphate a year. The only reason they are not producing that amount is that they have not been able to sell that amount.

Mr. JENSEN. I told the TVA officials that naturally the main interest of those who represent farm communities is that we simply do not want to take any chance of doing anything that would reduce the manufacture of this very valuable fertilizer while at the same time we want to be fair with everybody concerned. That would be you, your coproducers, the TVA, and the Government.

In a letter which I have, it was stated that if TVA sold this 30 or 40 thousand tons of diammonium phosphate fertilizer it would deter and stop the private industries from manufacturing this article. Is there somebody about to go into this business other than the ones who are in it now?

Mr. BENNETT. We have been looked upon as one of the pioneers in the manufacture of diammonium phosphate, and representatives of the steel industry have been coming to us. We are a little company, but they have been coming to us because we have been producing diammonium phosphate and selling it. Inland Steel and Bethlehem Steel and United States Steel have sent representatives to Omaha to see me in the last 2 or 3 months. They are faced with the problem of catching their ammonia gasses from their coke oven operations which they have been using in the manufacture of ammonium sulphate. They cannot now sell the ammonium sulphate. They want to capture these ammonia gasses and use them in some other way.

Another natural way for them to do is to use the ammonia from the coke oven gasses along with phosphoric acid and make diammonium phosphate. But these men have told me that their companies will not go into the manufacture of diammonium phosphate as long as they are faced with this low-priced competition from TVA because they cannot meet TVA. TVA will discourage them rather than encourage them.

Mr. JENSEN. What did they say their production might be? Did they anticipate a large production or what amount?

Mr. BENNETT. This is a pure guess, but Colorado Fuel & Iron Co., which is either the 9th or 10th largest steel company in the United States, has gone into the production of diammonium phosphate in their Minnewa, Colo., plant. Their production there from the amount of ammonia they capture from their coke-oven operations would make about 12,000 to 15,000 tons of diammonium phosphate per year. If you take Colorado Fuel & Iron Co. as a guide, if all the steel companies went into the manufacture of diammonium phosphate and used all of the coke-oven gases, they could easily make 50 times as much as Colorado Fuel & Iron Co. can make. In other words, in spite of the fact that Colorado Fuel & Iron Co. is either No. 9 or No. 10 in

the steel industry, they probably do not make over 2 or 3 percent of the steel produced.

Mr. JENSEN. It would be an enormous production if they ever went into the production which they say they will if they can make a profit.

Mr. BENNETT. That is right.

Mr. JENSEN. Every private concern has to make a profit.

Mr. Chairman, I am not going to take too much time here. I am sure that Mr. Bennett does speak for the private producers of diammonium phosphate and speaks honestly and properly and is a man of high standing and truthfulness.

I was quite elated over the fact that after we had questioned the TVA officials on this matter that they finally said, well, 20,000 tons was all they expected to manufacture per year. I hope, Mr. Chairman, that the TVA will stay with their regular procedure in this fertilizer business by not going into the field that private industry should handle. Of course, as Mr. Bennett says, they cannot compete with TVA which pays no taxes, whether it be diammonium phosphate or anything else that is produced and sold by tax-free corporations.

Really, Mr. Chairman, I think this whole thing depends on the TVA working with private industry with the right motive at heart, from the standpoint that this commodity has been, and I believe the TVA will admit it, brought to as near perfection as it is almost humanly possible. But as the chairman said a minute ago, they want to have it used by more farmers and they have an educational program going on. The facts, of course, are that most every county in the United States has an extension agent. You would be surprised how fast these farmers learn about the value of a new fertilizer, and they are quick to grab it. So it just appears to me, Mr. Chairman, Mr. Bennett, and gentlemen, that this is a case where fairness and equity between men must be practiced. As far as I am concerned, I will say right now that certainly I do not want TVA to compete with private industry to the point that it is detrimental to the farmers in getting this very valuable commodity.

As I said to TVA officials the other day, even though Iowa has 25 percent of the class A land in America, we need fertilizer and we need a lot of it to supplement the elements in the soil that are not there, in order to get the production. That is true all over the United States. I think, Mr. Chairman, that is all I have to say.

Mr. PHILLIPS. Mr. Chairman, I think maybe the record ought to show for clarity that this Maryland, Mo., company to which you referred is a cooperative and, therefore, that it pays no taxes and has no selling expense. Therefore, it is not properly considered as a comparable company with a private company which must assume selling expenses and the taxes that it must pay.

Mr. RABAUT. I did not know it was a cooperative.

Mr. PHILLIPS. In a word it is in the same category as the TVA itself. I am assuming that is the situation.

Mr. FOGARTY. I am not too familiar with these co-ops because in my area of the country we do not have many co-ops. I noticed on Mr. Bennett's cost he refers to cost without selling expense.

Mr. RABAUT. It is just the cost of production.

Mr. FOGARTY. I know co-ops do not pay taxes. I think they should, but they do not.

Mr. PHILLIPS. I agree with you, especially these that sell commodities.

Mr. FOGARTY. For my own information, will you tell me how that cost of this fertilizer would differ from Mr. Bennett's cost here because they do not pay taxes?

Mr. PHILLIPS. That is what I was coming to, to make sure to get a comparable cost. My next question to Mr. Bennett is whether his expenses as shown on the supplemental page to the statement do include profit. You say they do not include selling expenses. Do they include anything above the actual cost of production? In other words, where you said Kansas City, Mo., $122.22 bagged for the TVA selling price, as against $130.83 cents bagged at Kansas City for the Bennett Chemical Co., and your notation says "without selling expense." Does that include profit, taxes, any item over and above the actual cost of production?

Mr. BENNETT. I would like to tell you exactly what those figures cover. They cover $112.95 for the materials alone delivered to our plant at Omaha for making it at Omaha. In addition to that, there is a total of $4 per ton for bags. There is a total of $4.45 per ton for production costs. There is a total of $3.40 per ton for management and administration. There is a total of $1.67 a ton for depreciation. Then we us an average outbound freight of $5.40 to get our cost at Kansas City or to get our cost at any of these points.

We have taken from Omaha to these points, but in our general calculations we use an average outbound freight of $5.40.

I might say that there are taxes taken into consideration. In our management and administration we consider executive salaries, accounting, taxes, travel, and insurance. In none of these figures has any selling expense been considered. In our production costs we consider labor, power, water, gas, and superintendents.

Mr. JENSEN. Making a total of how much?

Mr. PHILLIPS. Without the markup,

Mr. BENNETT. Our total cost of production at Omaha bagged is $126.40 per ton, with no profit, with all local taxes in.

Mr. PHILLIPS. That is bulk?

Mr. BENNETT. No, that is bagged. It is $122.47 in bulk and $126.47 in bags. Those are our basic costs.

Mr. RABAUT. Are the rest listed here the same?

Mr. BENNETT. Those are basic costs without selling expenses.

Mr. PHILLIPS. What would your customary markup be?

Mr. BENNETT. Our selling price to dealers is $146 per ton delivered. We have a cost to the average delivered point of $134.87. Now when we sell the distributors, who in turn resell to dealers, we sell distributors at $141 a ton delivered. So we would have approximately $6 a ton margin where we sell to a distributor, and we would have approximately $11 a ton margin where we sell to dealers. I might say we have over 800 dealers in Kansas, Iowa, Nebraska, and South Dakota, who are accustomed to buying from us.

Mr. JENSON. You make about 4 percent?

Mr. PHILLIPS. Just a moment. Out of that he has to charge items which I am not sure he covered in his other figure which TVA would charge up against the Government, I presume. That is, the general research on improvements and advances. Have you taken that into consideration?

Mr. BENNETT. We have some experimental expense under administrative.

Mr. PHILLIPS. Then we will take that out. I do not know whether you have stockholders or not, but how did you get into business? Is it a corporation?

Mr. BENNETT. We have a corporation. Five of us put up about the $275,000 that was necessary to go into this business at Denver.

Mr. PHILLIPS. Of course, the interest represented by dividends would be taken out of the $6 or the $11?

Mr. BENNETT. There has been no dividends. However, some of us took part of our investment in debentures, so there is interest on the debentures.

Mr. PHILLIPS. Have you plowed it back into the business?

Mr. BENNETT. Yes.

Mr. PHILLIPS. Then there was another item I wanted to speak about, Mr. Chairman, very briefly, if I may. Advertising you charge off as a sales expense?

Mr. BENNETT. Yes.

Mr. PHILLIPS. Mr. Fogarty asked questions when he was looking at this chart that I have here which shows where they have their test demonstration farms, why it was that they were relatively centered in the area of what they call the Tennessee Valley Authority area. There were none in California. I can tell you very simply. They would not send it to us. I can show you my correspondence files of 15 years if I could find them, that they simply said, "We haven't enough to send it out of the Tennessee Valley."

Mr. FOGARTY. That was not the answer they gave.

Mr. PHILLIPS. That is correct.

Mr. FOGARTY. They gave the answer that the colleges were not interested in that section.

Mr. PHILLIPS. I could immediately disabuse them of that idea by my own correspondence of 15 years ago. The reason they give has a certain justification. Let me make it clear. They contend under the statute they are primarily obligated to take care of the Tennessee Valley. But if you look at this map, if this were what they call a test-demonstration program, there could not possibly be this concentration down there. It would be spread in various parts of the United States to see the effects of diammonium phosphate in one case or superphosphate in another case in different climates, in different types of soil, for different commodities, and different growing conditions which are just as different in California and Tennessee as they might be here and in Europe. Consequently, it is not in fact a test-demonstration program.

Mr. RABAUT. You must take into consideration the location geographically of the Tennessee Valley. The Tennessee Valley is in Tennessee and these adjacent territories of Alabama, Mississippi, and Georgia and all this and that. Naturally, there is going to be a concentration of it in that vicinity. That is only natural. Just the same as the automobile concentration is around Detroit. You can hardly get away from it.

They did say something about the land-grant colleges and that it was through them they acted.

Mr. PHILLIPS. That is correct.

Mr. RABAUT. They said several times here it is not a matter of them going into competition. They told us pointblank that their price is cheaper to get it going. That is not only with this fertilizer but other fertilizer. And it was for no other purpose than to cause a demand for it through industry.

I know it is natural to have an apprehensive feeling that somebody is making an inroad on our preserves, but this is a brand new company. They are producing this material only since last year. It is not in my nature to harm a soul. I really think what TVA is trying to be is your salesmen and you are just not mindful of it. In other words, you have the feeling that they are trying to make an inroad on you. I do not think that it is really measurable. My personal feeling is that it is not measurable. I feel that you will find they are paving the way for you to be ready for a great business. I would say from the dottings we have on the map in that vicinity, their inroads are infinitesimal. That is my thought about it. They are trying to make this go. They have more of a chance to contact more people than you have and the steel companies. Everybody knows that the Tennessee Valley Authority has been making fertilizer for years. Isn't that an argument for it?

Mr. BENNETT. That is an argument for it, yes.

Mr. RABAUT. If it is not a good argument, knock it down.

Mr. FOGARTY. Mr. Chairman, I kind of agree with you in a way, and Mr. Jensen. This is a problem that goes both ways with the farmer. The farmer wants it and he wants it at the best price he can get it.

Mr. RABAUT. He does not want it. They have to sell it to him. It is new.

Mr. JENSEN. There is a great demand for it now.

Mr. FOGARTY. At the same time, I do not think any one of us wants TVA or any other governmental agency manufacturing anything in competition with private enterprise.

Mr. RABAUT. That is right; but you must remember, this is only a year old for this witness, so it is new. How many farmers know about something that is a year old?

Mr. JENSEN. Mr. Chairman, other companies have been manufacturing this for 4 and 5 years.

Mr. PHILLIPS. His company is a year old, but this is an old fertilizer.

Mr. RABAUT. I cannot understand the TVA pushing it if it is an old affair. Let us go into it with TVA.

Mr. PHILLIPS. No, let us go into it with a disinterested witness.

Mr. FOGARTY. Mr. Bennett, your biggest item of cost is material delivered to your place at Omaha, which is $112.95.

Mr. BENNETT. That is right.

Mr. FOGARTY. Would it cost this cooperative group the same to have the material delivered at the same place?

Mr. BENNETT. They would be able to buy fertilizer grade phosphoric acid at $80 a ton, which is the same price we pay; but phosphoric acid is made at St. Louis, and Maryland Heights is only 15 or 18 miles outside of St. Louis, so they would have a small amount of freight. They would be able to buy anhydrous ammonia soon from the Mississippi River Chemical Co. which is now building a plant some 50 or 75 or 100 miles from St. Louis—I do not know the town, but it is in the St. Louis area. There is another anhydrous plant which National Distillers has brought into production at Tuscola, Ill., about

150 miles from St. Louis, so they would have two ingredients which they would pay the same price for as we. They would have possibly a little less freight than we have.

Mr. FOGARTY. How much would that amount to in this figure of $112.95?

Mr. BENNETT. If you had no freight to pay on either ingredient, you could buy the amount of anhydrous ammonia and phosphoric acid which it takes to make one ton of diammonium phosphate for $102.95. We buy anhydrous ammonia from Allied Chemical & Dye which have a plant at La Platte, Nebr., which is only about 8 miles from our plant, but it costs $5.80 a ton freight because it is still a line haul and it is still a liquid under pressure.

Mr. FOGARTY. It costs you that much?

Mr. BENNETT. It is still a line haul. It takes highly specialized equipment to handle it, or it would break the tanks open. The freight rates are high on anhydrous ammonia. We buy phosphoric acid from West Waco Co., and they have a plant at Lawrence, Kans., and we are 180 miles from Lawrence. So we have relatively close sources of supply on the two basic materials.

By the way, I am sure the cooperative is not in production yet. They say they could produce it for that. I am sure the Missouri Farmers Association, a cooperative, who have a fertilizer plant at Maryland Heights, have never yet produced diammonium phosphate.

Mr. FOGARTY. According to your figures, if they get into the manufacture of this phosphate, they will be able to buy the materials about $10 a ton cheaper than you.

Mr. BENNETT. If they can, it will be only because of lesser freight.

Mr. FOGARTY. But they happen to be situated that way?

Mr. BENNETT. Yes.

Mr. FOGARTY. Which means a $10 differential in costs. Taxes have nothing to do with that.

Mr. BENNETT. That is right.

Mr. PHILLIPS. They are limited by law to sales to their own members. They are really not a competitor in that sense with Mr. Bennett. He has to pay selling prices and has a higher overhead than the cooperative would have. I do not know whether they can make it or not for that. I am not arguing that.

Mr. FOGARTY. What about the other plants that are making it? Do they have the same problems you have in such a short haul as 8 miles?

Mr. BENNETT. Victor Chemical Co. and Monsanto Chemical Co. both charge considerably more for diammonium phosphate than we do. Best Fertilizer Co. in Oakland, Calif., who have a plant at Lathrop, Calif., and Oakland, make it and they charge more for it out there than we charge. Colorado Fuel & Iron Co. charge exactly the same price we charge.

Mr. Chairman, if I may, I would like to make one observation just to show how TVA fertilizers are actually marketed in Iowa, Nebraska, Kansas, South Dakota, and Colorado. Those are areas that I know. I know that TVA sells its fertilizer to some distributor, that distributor resells the fertilizer to some dealer, the dealer resells it to the farmers, and none of them know anything about educational or promotional programs. It is sold in the open market, period.

Mr. PHILLIPS. They make no report?

Mr. RABAUT. We will find out about it. We will investigate.

Mr. FOGARTY. If that is so, we should do something about it.

Mr. PHILLIPS. That is the point I was trying to make. What I was trying to point out was that this is, in reality, not a demonstration program but simply a production of a cheaper fertilizer primarily for the TVA area and then spreading into the other areas actually in competition with people who would produce it. Two years ago this subcommittee—or the comparable subcommittee—refused them $1 million to build what they called a research laboratory which was nothing more or less than a production plant.

What is the area in which diammonium phosphate is recognized now as a type of fertilizer for soil climate?

Mr. BENNETT. I can speak with authority to our general area.

Mr. PHILLIPS. My question is directed to the fact that in the area which I think you are going to name there are no demonstrations by the TVA.

Mr. BENNETT. In our general area which is Iowa, Kansas, Nebraska, South Dakota, and Colorado, so far as I know there has never been a demonstration plot put out by the TVA, and as far as I know, their products whether ammonium nitrate or triple superphosphate or diammonium phosphate have been sold through regular trade channels with no strings attached. I can say for an absolute fact that during the time when triple superphosphate was scarce and when ammonium nitrate was scarce, 3 years ago Farm Fertilizers, Inc., at Omaha bought between 1,500 and 2,000 tons of TVA superphosphrous through black market prices which the dealers did not need but were only willing to sell it to get a profit for us. We used it as an ingredient in our manufacture of other mixed goods. We would use that as one ingredient. I can say that our dealers have bought TVA ammonium nitrate during the days of scarcity always with no strings attached, but always through a second or third channel and at a gray or black market price.

Mr. RABAUT. Here is the map that has been submitted to the committee. Here is the key to the map. Land grant colleges conducting research with TVA fertilizers. Here is one in Iowa. There is one in Colorado. There is a circle here in the middle of a black spot, which I do not know is one or not, in Kansas. In the corner of Kansas they have an active test demonstration county listed right here on the map, and in the corner of Nebraska. I do not think that the agency would have the audacity to come here and present us with this map when it did not exist.

Mr. PHILLIPS. That is Omaha.

Mr. RABAUT. One in Nebraska and one in the corner of Kansas and one in the northern part of Colorado. Those are the active test demonstration counties. There is one here in South Dakota. There are six in Oklahoma. There they are right on there.

You say that is not so?

Mr. BENNETT. Mr. Chairman, I do not say that no demonstration plots have been put in there, but if there is any demonstration on diammonium phosphate, we do not know about it.

Mr. RABAUT. Those places are places where they can contact farmers and where they have been using it. We can go on and talk all night about it. What we are going to do is to talk to TVA about it and we will run this down. I think we have developed about as much as we can develop on this.

Mr. BENNETT. Mr. Chairman, may I just say one more thing. The Summers Fertilizer Co., of Baltimore, Md., who have a fertilizer plant in Souix Falls, S. Dak.—their president and vice president have come through Omaha and saw me en route to Sioux Falls. They are the TVA distributors for South Dakota. I asked both of those gentlemen if there were any strings tied to the TVA materials which they received, and they said, "No; no strings are tied to it at all."

Mr. RABAUT. What do you mean by "strings are tied?" They can ask any price they want?

Mr. BENNETT. Yes. They can sell it to anybody. It does not have to be for educational or experimental purposes. They just sell it to dealers or use it in their own manufacturing.

Mr. RABAUT. We will check on it. Thank you very much for your statement.

WEDNESDAY, JUNE 1, 1955.

TENNESSEE VALLEY AUTHORITY

WITNESSES

HON. ESTES KEFAUVER, A UNITED STATES SENATOR FROM THE STATE OF TENNESSEE
HON. ALBERT GORE, A UNITED STATES SENATOR FROM THE STATE OF TENNESSEE
HON. JERE COOPER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE
HON. TOM MURRAY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE
HON. JOE L. EVINS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE
HON. ROSS BASS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE
HON. J. PERCY PRIEST, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE
HON. CLIFFORD DAVIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE
HON. JAMES B. FRAZIER, JR., A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE
HON. HOWARD H. BAKER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF TENNESSEE
HON. THOMAS G. ABERNETHY, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MISSISSIPPI
HON. FRANK E. SMITH, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MISSISSIPPI
HON. JAMIE L. WHITTEN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MISSISSIPPI
HON. ARTHUR WINSTEAD, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF MISSISSIPPI
HON. ALBERT RAINS, A REPRESENTATIVE IN CONGRESS FROM THE THE STATE OF ALABAMA
HON. ROBERT E. JONES, JR., a REPRESENTATIVE IN CONGRESS FROM THE STATE OF ALABAMA
HON. W. PAT. JENNINGS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF VIRGINIA

HON. WILLIAM H. NATCHER, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF KENTUCKY
HON. FRANK G. CLEMENT, GOVERNOR OF TENNESSEE
A. R. FINLEY, GENERAL SUPERINTENDENT, ELECTRIC POWER BOARD, CHATTANOOGA, TENN.
W. H. SAXTON, MANAGER, TALLAHATCHIE VALLEY EPA, BATESVILLE, MISS.
MRS. W. C. WORTHY, FYFFE, ALA.
E. S. FERGUSON, SUPERINTENDENT, MURRAY ELECTRIC SYSTEM, MURRAY, KY.
JAMES N. BLOODWORTH, ATTORNEY, CITY ELECTRIC SYSTEM, DECATUR, ALA.
D. F. WRIGHT, SUPERINTENDENT, ALCORN COUNTY EPA, CORINTH, MISS.
C. S. RAINWATER, JR., ATTORNEY, APPALACHIAN EC, JEFFERSON CITY, TENN.
HON. GEORGE DEMPSTER, MAYOR, KNOXVILLE, TENN.
FLOYD JONES, MANAGER, GIBSON COUNTY ELECTRIC MEMBERSHIP COOPERATIVE, TRENTON, TENN.
CLYDE T. ELLIS, GENERAL MANAGER, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION, WASHINGTON, D. C.
ALEX RADIN, GENERAL MANAGER, AMERICAN PUBLIC POWER ASSOCIATION, WASHINGTON, D. C.
CHARLES M. STEWART, MANAGER, WARREN RURAL ELECTRIC COOPERATIVE CORP., BOWLING GREEN, KY.
PAUL H. TIDWELL, MANAGER, MERIWETHER-LEWIS ELECTRIC COOPERATIVE, CENTERVILLE, TENN.
J. E. SMITH, PRESIDENT, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION
ROBERT I. KOBAT, LEGISLATIVE AND MANAGEMENT ASSISTANT, NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION
JACK WILDMAN, ASSOCIATION OF TEST DEMONSTRATION FARM FAMILIES

Mr. RABAUT. The committee will be in order.

We have with us this morning our colleague, Jere Cooper, of Tennessee, the distinguished chairman of the Ways and Means Committee and one of the most beloved Members of the House. I shall ask him to present to this panel those whom he wishes as TVA witnesses.

Mr. Cooper.

STATEMENT OF CONGRESSMAN JERE COOPER

Mr. COOPER. Mr. Chairman, I appreciate the very kind and generous remarks of my good friend of so many years' standing, the distinguished chairman of this committee. I have been requested to present these witnesses to the committee today. One reason is that we have to make a slight change in the order of appearance, because one witness listed has to catch a plane, which necessitated this change in order of appearance.

I do appreciate the privilege of being present at this hearing. I should like to ask that the record show, Mr. Chairman, that all the Members of the Tennessee delegation in Congress are present at this hearing; including myself, Jere Cooper of the Eighth District of Tennessee, Tom Murray of Tennessee, Joe Evins, of Tennessee, Ross

Bass of Tennessee, Percy Priest, of Tennessee, Clifford Davis of Tennessee, J. B. Frazier, of Tennessee, Senator Estes Kefauver, of Tennessee, and Senator Albert Gore, of Tennessee, who will be here in a short time.

We also have present the Honorable Tom Abernethy, of Mississippi, and the Honorable Frank Smith of Mississippi.

I request permission, Mr. Chairman, for other Members to be listed as they come in the committee room, if that is agreeable.

Mr. RABAUT. All right.

Mr. COOPER. Mr. Chairman, it is my happy privilege, distinguished honor and very great pleasure to present to this committee our good friend who has been with us on many occasions in the past, His Excellency, the Governor of Tennessee, the Honorable Frank Clement, who will now address the committee.

STATEMENT OF GOVERNOR FRANK G. CLEMENT

Governor CLEMENT. Thank you very much, Congressman Cooper, Mr. Chairman, distinguished members of this panel, and distinguished friends from Tennessee.

I should like to say that it is always worth a trip to Washington to associate with our distinguished Representatives in this Capital City. We think our Senators and Congressmen do a mighty fine job taking care of the interests of the people of Tennessee. I am glad to get to be with you.

I appreciate the fact that you would hear me. I will do the best I can to be brief. I will present to you factually and without reservation certain thoughts which I feel are the thoughts of a vast majority of the people of Tennessee who are familiar with the problems which confront us. We are not here to try to be unfair toward any individual, any group, or any party. At the same time, we are not here to attempt to withhold any thoughts which we think will be helpful and which we think should be brought forth.

To you, gentlemen of the subcommittee panel of the House Appropriations Committee, let me say: I count it a privilege to appear before you, and I should like to thank you not only for myself but in behalf of my colleagues from the Tennessee Valley who are here and will later testify, and also in behalf of the 6 million power consumers of the valley who cannot be here, for this opportunity to be heard. One of the reasons that hearings of this type are so important is the fact that it affects all of our people and yet in such a way that only a few can afford to be present.

Last fall in testifying before the Joint Committee on Atomic Energy, against the Dixon-Yates deal, I said that we, the ultimate consumers of the valley, are the anointed sacrificial goats for a burnt offering to the gods of monopolistic exploitation. In this view of it, you should not be surprised that we are taking every measure available to us that we think might be effective in avoiding such a fate.

Recently, the present chairman of the TVA board wrote the mayor of Memphis, in behalf of the Bureau of the Budget, to find out if they were really serious about not using Dixon-Yates power.

I am assuming the distinguished chairman of the Board felt that was vital information, or he would not have used his valuable time in seeking it.

Mayor Frank Tobey, who unfortunately couldn't be here today, responded in a three-page letter, which began:

> It is inconceivable that Memphis should be dependent upon a source of power which is clearly inconsistent with the continued growth and development of our community.

And he concluded:

> For the reasons we have indicated, including those relating to pending litigation, it is our position that under no circumstances would the city of Memphis ever become a market for Dixon-Yates power.

You can see, gentlemen, that the mayor of Memphis—and it may be assumed, the people of Memphis—are really serious about not wanting the Dixon-Yates power. I can think of few issues in which the people of Memphis are in greater unanimity than in their opposition to the Dixon-Yates deal.

FOR FUNDAMENTAL REASONS

The reasons the mayor indicated, gentlemen, are fundamental.

Anyone who is familiar with the relationship of public-utility service to the welfare and health of a community knows perfectly well that no community should be made to rely upon a source of power existing entirely beyond its jurisdiction and that of the State in which it is situated—foreign to it and in no wise responsible for its economic development.

The Dixon-Yates arrangement violates every recognized principle of economical and efficient operation, which is basic to the development of utility systems.

EISENHOWER PARTNERSHIPS

Official spokesmen for the present Eisenhower administration have frequently referred to their public power policy as that of Federal-local partnership.

I have heard those statements made myself in White House conferences by official spokesmen for the administration. What kind of a partnership is it where the Federal Government makes a vital decision affecting the power supply of a city, a State, and a whole region, without first consulting the people who have a direct pecuniary interest? And what kind of partnership is it where the vital decisions on the part of the Federal Government affecting the city's, the State's, and the region's power supply and indeed their whole future, seem to be made, not by TVA, the Federal agency with which the distributors of power in the area have contracts, but by the Bureau of the Budget and the Atomic Energy Commission, neither of which has any interest in the region's problems nor in its point of view?

And speaking of strange partnerships, gentlemen, the Dixon-Yates deal seems to have been a fertile stimulant for them. According to a memorandum which Senator Lister Hill has made public it seems that a vice president of the First Boston Co. served the Bureau of the Budget as an adviser during the formulative days of the Dixon-Yates deal, which relation bore the profitable fruit of a preferred position for his company to underwrite the loans for Dixon-Yates. Those are just facts.

We uninitiated country people down in the valley have worked up an acute curiosity about these—I suppose you would call this one a sort of silent partnership between Government and big city banks—since the Bureau of the Budget never mentioned Mr. Adolph H. Wenzell's name, till Senator Hill questioned them.

At all events we are intensely suspicious of this sort of partnership and we are hopeful that the appropriate congressional committee will investigate it.

DIXON-YATES DEAL ILLOGICAL

Now it will be remembered that, with a prospective power shortage in the Tennessee Valley the Eisenhower administration set out to relieve TVA of a part of its contractual obligation to AEC and we wound up with the Dixon-Yates deal. We set out to procure substitute power for the country's biggest power consumer and we wind up forcing it upon the country's largest power producer—contrary to the President's announced intention.

As I said at the outset, we are taking every measure available to us to defeat the Dixon-Yates deal and these measures include legal action.

The State of Tennessee, in conjunction with the municipal and other distributors in the valley, is presently fighting this irresponsible effort to serve special interests, in the United States Court of Appeals for the District of Columbia, before the Securities and Exchange Commission and before the Federal Power Commission. Incidentally, actions attacking the legality of the Dixon-Yates contract with the Atomic Energy Commission and the right of Edgar Dixon, E. A. Yates and others to serve as officers of the Mississippi Valley Generating Co. have just been initiated. Mr. Dixon, it will be remembered, heads Middle South Utilities and Mr. Yates, the Southern Co. As you know the Federal Power Act provides that no individual can hold a position as an officer in more than one public utility company without FPC approval.

Insofar as the Dixon-Yates deal is concerned, we are confident that we will block it through the courts—and we are prepared to go to the Supreme Court with it, if necessary to do so.

When I speak of the State of Tennessee I speak of the official sovereign government of the State of Tennessee.

And if all court action fails, we are prepared to take other recourses. We had, at this time, rather not reveal what these measures are, but in the words of Davy Crockett, "We are in high spirits although we have had some difficulties to encounter."

In short, we intend to hold the Chickasaw Bluffs against this invasion by an Arkansas squatter from Rector Street, New York City. And that is no reflection upon the good citizens of the great State of Arkansas nor of New York City.

And I would like to point out before the committee panel that our litigation is serving far more than our local interests in the valley. We think it serves the interests of the citizens of Arkansas and the citizens of New York City.

It is first of all calculated to preserve the world's outstanding example of a completely integrated and coordinated utility system that continues to serve this Nation as a power reservoir for national defense and a yardstick for low-cost power that—despite the efforts of the private power lobby—remains a nationwide influence and example

for low rates. And I will predict here that if the calamity of TVA's destruction should ever befall this Nation the people from one end to the other would soon suffer the unfortunate results of greatly increased electric rates.

Next, we are serving the taxpayers of this Nation. We are serving them first by preventing the Government from entering into a contract for power that will cost the taxpayers $90 million more, according to AEC admission and $140 million more according to the estimate of TVA engineers. But that is only the begenning of it. Should the Dixon-Yates deal go through, there would be other Dixon-Yates deals around the perimeter of the great Tennessee Valley power system.

Moreover, there would be an immeasurable loss resulting from economic stagnation in the valley from the disruption of the TVA system and the eventual high rates. During the 20 years of TVA, the people of the Valley have substantially doubled their tax contribution to the Federal Government. Who can say what loss such a backset might bring, not merely to us, but to the revenues of this Nation?

And finally we are serving the people and the economy of the whole Nation in our effort to prevent the Securities and Exchange Commission, through its approval of the Dixon-Yates deal, from making a shambles of the Holding Company Act.

SEC ignored the interlock and concentration of control provisions of the act, despite the clear statement of policy on the part of Congress that holding companies must be kept within bounds and should be allowed to expand their holdings only when a clear showing can be made that the public interest will be served.

Moreover, SEC has allowed the Southern Co. to acquire an interest in a facility which is 150 miles away from its service area, in plain contravention of the Holding Company Act. And there are other points which, in the view of our counsel, violate the law. And we are asking the court of appeals to reverse the SEC order.

So the effort to destroy TVA by subterfuge jeopardizes other aspects of our national welfare.

I have appeared before several Congressional committees over the past 3 years to advocate adequate appropriations for TVA. I am still convinced that this is the most responsible and economical way in which to finance the expansion of this great national-regional multipurpose Federal enterprise.

We are in need not only of power through the much-delayed-for-years Fulton Plant, but also such other locations as Johnsonville, Gallatin, Kingston and John Sevier.

But the present administration oposes this method. And by majority voice the Congress, at one time or another, has supported the administration policy.

In the fact of this situation, the majority of the Tennessee Valley Authority have proposed to the Bureau of the Budget immediate minimum measures to meet the valley's impending power shortage. As we understand it, the majority recommendations, among other things, propose that an item of $6½ million in the budget now earmarked for a transmission line from the middle of the Mississippi River to Memphis—since it can never be used for that purpose—be released to TVA for beginning the needed new generating plant at Fulton, Tenn., to build up the western end of the system.

As spokesman for the people of my State and a representative of the valley, I would like to express our approval of the recommendations of the majority of the TVA Board, which, until the Bureau of the Budget reversed the chairman, constituted the recommendations of the entire TVA board.

In addition we think—out of our experience with the methods employed by the Dixon-Yates dealers—that it is important also to write a prohibition in the appropriations bill providing that none of the money therein can be used for salaries, and so forth, to carry out the Dixon-Yates contract.

We have been advised that the proposal of the majority of the TVA Board for the transfer of the $6½ million item to the Fulton project contemplates the enactment of additional legislation not properly before this committee that would, also, authorize the Board to employ alternative or supplementary methods of financing expansion, including the issuance of revenue bonds and lease-purchase arrangements with local governments to finance specific projects.

Let me say here that we fully approve the whole plan as it has been developed by the majority of the Authority. I would also point out, in passing, that the proposed change of purpose for the $6½ million item in the budget will in no wise increase the budget and cannot be opposed by the administration on that ground.

Before relinquishing the subject, I must reiterate for you, gentlemen, that the self-financing alternative or supplementary proposals made by the majority of the TVA Board meet with widespread popular approval in the valley. The valley power consumers are ready and eager to pay for revenue bond or local financing for TVA expansion on the fair businesslike terms proposed by a majority of the Board, even though appropriations are the cheapest money available and it behooves the Government to finance a project of such national value as TVA by the cheapest means available, and even though appropriations would be repaid under a sound businesslike schedule also, and should in no wise be abandoned as a method of financing expansion.

Yet I cannot mention the plan for alternative financing proposed by the majority of the Authority without comment on the action of the Bureau of the Budget seeking to wreck this plan and on the turncoat action of the President's general on the TVA Board in switching his support from the original plan, to which he was a party, to this piece of sabotage.

And I must comment on it for what it signifies of the intentions of this administration toward TVA. In the Budget Bureau's attempt to wreck the plan for self-financing, to which administration spokesmen have given such loud lip-service, we have finally a candid-camera view of their intentions. For anyone who may have clung to any shred of doubt, the real purpose of this administration has now been made cruelly clear.

RESOURCE DEVELOPMENT

Before ending my comment here, I would like to emphasize for you, gentlemen, the continued importance of support for TVA resource development. The resource development activities of TVA establish an essential link between river control operations and the institutions and people of the valley. In many ways, the resource development program is at the heart of the TVA partnership, for it binds

together what otherwise might be separate Federal, State, and local efforts into a joint approach to the development of the valley.

You may ask, Has not the valley, in its development, got beyond the need of this activity on the part of TVA.

It is true that the States and local governments of the valley have taken advantage, and rightfully so, of TVA assistance to enlarge and broaden the scope of their activities concerned with resource development and use. Existing State agencies have been expanded and strengthened and in some instances new agencies have been created.

Indeed, operating expenditures of State agencies dealing with agriculture, forestry, fish and wildlife, and parks have multiplied by more than 6 times over the last quarter of a century.

As local governments have taken over resource development function from TVA, the Authority has restricted and modified its activities and its appropriation for them. Yet it still remains vital to the region and to the statutory aims of TVA.

The important and necessary function that TVA now exercises in resource development activity over the valley now is as a central clearing house of the activities of the various States and local governments, as a coordinator among them, a leader and a source of technical advice and experience—which the States are unable as yet to achieve for themselves.

For example, in Tennessee, last year we launched, under the general supervision of the TVA, our first watershed development project in West Tennessee in the Beech River drainage system. In other words, we are only now acquiring the technical facilities and know-how to try our hand at launching and carrying on such a project.

APPROPRIATION OPPOSED

I am going to urge the committee to disallow one proposal for an appropriation.

That should be good news, when a witness appears and asks you to disallow some proposal for an appropriation. I have reference to the $100,000 alleged "contingency fund" which I am told that General Vogel, TVA's present Board Chairman, is seeking. I am advised that the majority of the Board have said that they know of no contingency in TVA affairs that this $100,000 item is intended to meet. The ambiguous general has been quoted in the press as saying, when questioned by reporters as to what use he intended to make of the $100,000, that it would not be proper for him at the present time to describe the use to which the money will be put.

I will go even further. We in the valley intensely suspect that the use to which the $100,000 would be put would not be proper.

In conclusion, gentlemen of the committee, let me reiterate that we are here grateful of the opportunity you grant us, to respectfully urge you to support those minimum measures now sought by the majority of the Tennessee Valley Authority to escape Dixon-Yates degradation and destruction, and to meet the pressing need for new generating facilities for TVA to avoid an impending power shortage in the valley.

I have attempted to give you our views, our ideas about certain basic matters and matters of policy. I have brought with me a staff I think is capable of answering any question or obtaining the answer to any

question that might be brought up by this distinguished group of Congressmen, technical or otherwise. We want to be helpful and we will be helpful if given the opportunity to do so.

You have been most courteous to us, and I want to say to you again that there is no way I can describe to you the importance of TVA; not just to the people of Tennessee and not just to the people of the Tennessee Valley, but to the people of America and the free world. We sincerely believe that TVA is one Federal agency which has in its own honorable way reflected what we like to say is our way of reflecting greater glory to God and progress for all mankind. We believe in it. We are anxious to be cooperative in any honorable financing plan such as that which was given the approval unanimously of the TVA Board, and which we now find scrapped, with one member of the TVA Board running for cover when he finds it does not get approval up the line. We think the time has come for Congress to take a firm hand and see to it that this great agency is not destroyed by indirection by those who have refused to admit directly they are willing to destroy it.

Thank you very much. I will try to answer any questions you might ask me. If I cannot answer them I will not hesitate to say so and ask my staff to assist. My staff and I are available, and all the facilities we have at hand, for this great group.

Mr. RABAUT. Governor Clement, after hearing your devotion to the people as expressed in this statement it does not tak much imagination to understand the devotion of the people to you in the State of Tennessee.

Governor CLEMENT. You are very kind. Thank you.

Mr. RABAUT. I am very pleased that you made the statement that you did on this subject.

Governor CLEMENT. Thank you very much, sir.

Mr. RABAUT. Are there any questions of the Governor?

Mr. EVINS. No, Mr. Chairman; other than to commend what you have said.

Mr. PHILLIPS. It is nice to see you again, Governor.

Governor CLEMENT. It is good to see you, sir.

Mr. PHILLIPS. Last year—and I quote from the record of last year—you made a statement about a 20-year celebration. I think you called it a "heartwarming" celebration at Tupelo, Miss. Do you remember?

Governor CLEMENT. That is correct, sir.

Mr. PHILLIPS. I think I used your words.

Governor CLEMENT. That sounds like what I might have said.

Mr. PHILLIPS. It was to witness the renewal of the first 20-year contract between a valley distributor and TVA.

Governor CLEMENT. That is correct, sir.

Mr. PHILLIPS. Did you by any chance read the Tupelo Journal of June 12, 1953, in which they had an editorial entitled "Lost Good Will Greatest Threat to TVA"? I had it put in the record. It will be printed in the record in full.

Governor CLEMENT. I will be happy to read it. I do not remember offhand reading that particular editorial. I might have.

Mr. PHILLIPS. I will quote briefly a couple of sentences.

Governor CLEMENT. All right, sir.

Mr. PHILLIPS. I quote:

The Tennessee Valley Authority which has done a better job of publicizing itself than perhaps any other agency of the Federal Government has overplayed its hand.

It has talked so much about the prosperity it has brought the people of the area it seems that the rest of the Nation has grown jealous.

* * * The time has come for TVA to back up and admit that the fastest growth in the South actually has taken place outside the TVA area and that we who live within its borders are still as a whole just about the poorest people in America.

This of course would be quite true. For with the exception of giant projects like the Oak Ridge atomic energy plant that Uncle Sam has plunked down in Tennessee, the TVA area has shown less rapid industrial growth than several other portions of the South.

And in income the TVA area is still dollar for dollar further behind the national average than it was in 1933 when the Tennessee Valley Authority was first established.

I merely wanted to say that this has been a matter of discussion before this subcommittee for some time, and perhaps that heartwarming celebration down there had another side to the coin, too.

I think the intent of this committee has not been to "get TVA"—you mentioned its destruction several times. There has never been any evidence before this committee of a desire to destroy TVA. I think the intent is to put it on its own feet.

EXPENDITURES BY TENNESSEE FOR RESOURCE-DEVELOPMENT WORK

I should like to ask you this specific question: Last year TVA testified that 7 valley States were expending $45 million for resource development work. Can you tell us how much of that amount Tennessee contributed?

Governor CLEMENT. Of the $45 million for resource development I cannot; but I will be glad to furnish it to the committee.

Mr. PHILLIPS. I wish you would.

Governor CLEMENT. All right.

(The information is as follows:)

The amount expended by the State of Tennessee for resource development was $6.1 million.

Mr. PHILLIPS. You will remember 2 years ago when this matter of resource development first came up and we reduced the amount, which had gone in 1 previous year as high as $7 million, as I recall it, we reduced it to a figure which was in fact a lower figure than is now in the budget. The reason we restored it to the higher figure 2 years ago was because I was visited by quite a few people from Tennessee. We had a very friendly conference. Maybe some of those people are in the room today.

There was no apparent objection on the part of Tennessee to assuming some of this responsibility, which all other States carry by themselves, but the request was not to do it abruptly. They could not act until the biennial meeting of the Tennessee Legislature. As the Governor, will you tell me now what the Tennessee Legislature has done to pick up Tennessee's part of this annual expenditure for resource development?

Governor CLEMENT. That question addresses itself to the same point I was asked a moment ago. We increased appropriations generally in Tennessee, as was evidenced by the fact that today the sales tax has gone from 2 cents to 3 cents in that great State. But I cannot give you the specific answer; but I will furnish it immediately, Congressman Phillips, and we will see that you get it without delay.

CITY OF MEMPHIS AND THE DIXON-YATES CONTRACT

Mr. PHILLIPS. I made a note on the margin of your speech. You said, "I think there are two issues in which the people of Memphis are in great unanimity." That is in connection with the Dixon-Yates deal. I have a dim recollection, and if I had known this was coming up I would have come prepared for it, but I think I have a statement from the chamber of commerce of Memphis approving the Dixon-Yates arrangement; am I right?

Governor CLEMENT. I do not know whether you have that statement or not. I do know that one or more active members of that distinguished body, and it is a very fine group of people, have been interested in seeing that the Dixon-Yates idea becomes a reality. But I feel, very frankly, that the mayor of Memphis is the chief spokesman of the people of the city of Memphis at this particular time, and is the one who is rather familiar with what is going on in Memphis, in Shelby County, and I can only reiterate, without regard to whether or not such a statement was, or is, in existence, that I think that the most overwhelming support that could be given any controversial or political issue of that type at this time would be given to the idea of blocking Dixon-Yates.

I am not familiar with the statement you mention, but I am familiar with the fact that, within the distinguished ranks of the chamber of commerce, there have been one or more people, with whom I am familiar, who have talked with me about it, who have supported the Dixon-Yates idea. We have not attempted to hide from those people: on the contrary, we have sought every opportunity to discuss the matter with anyone who shared a different view from our own.

Mr. PHILLIPS. Having once been a chamber of commerce secretary, I am of the opinion that chambers of commerce do not as a rule go off the deep end unless they think they represent a fair part of the people in the community.

Governor CLEMENT. I have a very high regard for chambers of commerce generally, and the Memphis Chamber of Commerce in particular, but, like every other body composed of human beings, they are subject to error and if they endorsed the Dixon-Yates proposal in this case, I will have to say to them respectfully, but firmly, I consider that they have erred in their judgment.

Mr. PHILLIPS. I am sorry the mayor is not here, because I want to ask him something about a letter. Will you speak for him?

Governor CLEMENT. I will be glad to offer to do this—I have no authority to do it, but I will be glad to try to get from the mayor the answer to any question that you would like for me to carry back to him.

Mr. PHILLIPS. If Memphis should refuse Dixon-Yates power, as we call it, power from the Mississippi Valley Generating Co., who

would lose but Memphis? They would simply have to build their own powerplant, which is a step they could have taken up any time. They could do it today without all this furor; they could go out and build a powerplant like other communities in the United States. Why all this furor about the refusal of the Dixon-Yates plan? Why do they not do like other municipalities, just go out and build their own powerplant?

Governor CLEMENT. I mean this respectfully and I do not want to be presumptuous, but I think the Congressman's question assumes that the Congress is going to say to the people of Tennessee Valley, you will either let us cram down your throat a deal which is going to cost the people an unconscionable $140 million—a deal that a whole lot of very fine influential and high-minded people think is immoral, or is at least unmoral by its very nature, and if we do not submit to this financial rape, that what we are going to do is turn around and tell you that you will either take that or we will turn the lights out on you. I just do not believe the Congress is going to say that, Mr. Congressman.

Mr. PHILLIPS. I read the contract last year—I have not read it recently, but I do not recall anything in the language or any implication that would agree with you on that statement. I think the Mississippi Valley Generating Co. would simply have to dispose of the power somewhere else and Memphis would make its own power.

Governor CLEMENT. I have to conclude my remarks on the Dixon-Yates by saying this to the distinguished Congressman from California: I think anything is better than sitting back and spinelessly submitting to something that you consider absolutely, basically, legally and morally wrong. And if there has ever been any issue brought to my attention, since I became Governor, which I considered basically to be both legally and morally wrong, it is the Dixon-Yates deal. So whatever courses are open to us, sir, we would have to consider them and exhaust them before we will let that Dixon-Yates power get beyond the middle of the Mississippi River. I do not know what they are going to do with it, after they get it out to the middle of the river, but I do not believe it will cross.

Mr. PHILLIPS. I was not taking exception to that point: I was simply taking exception to this furor in Memphis over whether or not they would take the power when all Memphis has to do is to build its own plant like other communities do and let the Mississippi Valley Generating Co. sell it elsewhere.

Governor CLEMENT. I think that the one thing we have to keep in mind in discussing the building of a plant, sir, by either the city or a State, is this integrated system and the complexities that are involved there. It is not that the people of Memphis or the people of Tennessee, or the people of the valley are unwilling to do this, that, or the other; to the contrary, I think it can be fairly said that we are almost unanimously willing to do anything which is honorable and fair and which will promote the interest, not only of our region, but of the Nation. But we have an integrated system that has worked. We have an integrated system that has helped consumers of power in your district and the districts represented by these other Congressmen, to obtain electricity at a more reasonable rate, than, we feel, they would have obtained it otherwise, and at the same time the private power people

have been able to get, by and large, certainly a fair return on their investment. And we feel that before we talk about the building of individual plants by a separate city or a separate county or a separate State, you have to solve the problem of integration and the complexities related thereto, and I do not think it is just quite that simple. I am not saying that it cannot be done, and I am not saying that it never will be done, but I do think there is a more desirable course.

Of course, we felt that the most desirable was that which we have had, the appropriation system which was set up in the beginning. We were very willing, and instead of being recalcitrant, adopted the TVA Board's recommendation for this new plant, and thought that we were being cooperative and holding hands with everyone concerned, because we understood that General Vogel adopted it, too. Then it goes to the Bureau of the Budget and we find we lose one of the members of the Board, but we still have a majority and we stand by that plan, which will work.

Mr. PHILLIPS. I did not know you were going to bring up another matter, regarding which I made a note. I think we should, in all fairness, tell all sides of the story; I think you would want to yourself, and, as I said, I did not bring over my votes from last year's hearing. I recall that when the question of Mr. Wenzell, who you say was an officer of the Boston bank—and I was not aware of that, but that is all right, he may have been—but the Bureau of the Budget, in reply to this question, said specifically that Mr. Wenzell had not worked definitely upon the Dixon-Yates contract; that he was in the Bureau of the Budget at the time for another purpose. Am I right; do you remember?

Governor CLEMENT. I believe you are correct in your statement that the Bureau of the Budget did say that. However, I have no way of knowing what goes on inside the Bureau of the Budget. I am a stranger over there. But I do know that it has not been denied that the gentleman occupied a position of adviser to the Director of the Budget at the very time all of this was going on, and in order not to be naive, I feel that I should make this statement, that, as governor, I found that there are many people who are in my office and advising on different problems, but it is hard for me to conceive that a man, under these conditions, would completely divorce himself from ever having anything about such a multi-million dollar deal, announced or discussed in his presence or around him, unless, first of all, he had something of a guilty conscience about it; and, secondly, if he did discuss it, or advise with them, then that throws out the statement that was made.

I have before me a copy of a speech made by a distinguished United States Senator, one in whom I have great confidence, a speech by Senator Lister Hill, of Alabama, United States Senate, on February 18, 1955, entitled, "New Evidence in Dixon-Yates Deal."

And among other things he discussed in some detail to some length was this very question that we were talking about. I will be glad to make a copy of this available to the committee. He discussed it at much more length than I do, and again, I do not know to what extent the gentleman discussed this with those who were in the Bureau of the Budget. All I do know is that, particularly in a deal which seems to smack so much of favoritism, and gives such advantages to a few selfish-minded individuals or concerns, we cannot help but be very

very suspicious, and it leaves a shadow of a doubt which I do not think should surround Government activities.

ESTIMATES FOR MANAGEMENT STUDIES

Mr. PHILLIPS. My own opinion was that the principal "favoritism" was one that would permit the utilities to pay taxes which would make up the difference you have mentioned. But if you do not know what goes on inside the Bureau of the Budget, do you think it was quite fair to use this statement, on page 21:

> We in the valley intensely suspect that the use to which the $100,000 would be put would not be proper.

That is the end of the quotation. Now I would like to read the statement of the Bureau of the Budget. This refers to the TVA budget:

> The three largest reductions were $38,000 in Government Relations and Economic Staff; $71,000 for the Information Office; and $81,000 in the Division of Personnel.
>
> In accepting these reductions, the Chairman—

and I am interpolating General Vogel—

> called attention to the need of a staff responsible to the general manager to make the necessary investigation for management purposes. This, he thought, would make it possible to have special studies made, leading toward improvement in the operation and administration of the TVA. Since this proposal had not been officially approved by the other members of the Board, and was in the nature of a new project, the details of which had not been worked out, a round amount of $100,000 was included under the heading, "Undistributed (Contingency).

Now, Governor, having at one time been engaged in and having been interested for many years in the subject of internal management and having helped finance through this committee most of the Government commissions and committees which are presently engaged in that subject, I am astonished that you should say that the use of money for the development of management plans for efficiency, for competency, is not proper.

Governor CLEMENT. I am equally astonished, if you will permit me to say so, that you would say that I said the use of money for that purpose was not proper.

Mr. PHILLIPS. I am reading from your speech.

Governor CLEMENT. Yes, sir, but if you will read my speech, I did not say what you said I said. I said that the use to which the $100,000 would be put would not be proper.

Now, if that is truly the use to which it would be put, we cannot see why the majority of the Board could not approve it and why it could not be spelled out as to what it is going to be used for, rather than in this particular case, put in a contingency fund. Now, by the use of the word "proper" or "not proper" I certainly assure you that I was not questioning, or indicating, that General Vogel would spend the money for his own personal use. But I was questioning whether or not the $100,000 would be spent properly in the interest of the people who are the taxpayers and the consumers. And I feel that what management or efficiency studies need to be made, that the majority of the Board, sir, can spell out and that the Congress can certainly appropriate money for that purpose.

Mr. PHILLIPS. May I call your attention to a fact which was testified to abundantly before this subcommittee: The General was not

asking for the money for himself but was asking for it for management—for management purposes, and it seems to me that if there is any astonishment to ensue, it should be directed to the members of the Board for not having approved it. Why do they want to deny what practically every industry in the United States today considers necessary?

Governor CLEMENT. Knowing the other two members of the Board and having the confidence in them that I do, sir, I have no reason to believe that they want to deny anything that is proper; and that is one reason, and I am very strong in my conviction, that if these two gentlemen cannot subscribe to a $100,000 appropriation, I cannot see why it is so essential that the other member of the Board, the newest member, and who has certainly shown himself to be far from independent, should be given such weight; and it will be astonishing to me if the Congress goes overboard to provide funds which a majority of the board has not requested, but funds which a minority does request. We have had a pretty hard time getting funds, even when the unanimous group on the Board were asking for it, and certainly it would be a new day when one member can come up here and get funds without having the support of at least one other member.

INTEREST RATE

Mr. PHILLIPS. Would you be willing to pay an interest rate on the unpaid balance, the same interest rate that the Federal Government pays for that money? That came up before, and I think the general feeling was that it was agreeable, was it not?

Governor CLEMENT. Yes. We are willing to pay a fair interest rate. When you get into the same amount of money that the Federal Government pays on it, again, I do not want the Federal Government in some Dixon-Yates deal, where the interest rate can go up mighty high, sir, and we could be in a position where, if we pay just what the Federal Government pays, that is one thing, but——

Mr. PHILLIPS (interposing). Whatever it pays on its bonds.

Governor CLEMENT (continuing). There is no reason why we should not pay a fair interest rate, and I would say that a fair interest rate would be the actual cost of the money, on a fair and honorable basis.

Mr. PHILLIPS. Thank you, Governor.

Governor CLEMENT. Thank you.

ESTIMATE FOR MANAGEMENT STUDIES

Mr. FOGARTY. Governor Clement, in the colloquy between you and Congressman Phillips on this $100,000—that was requested by the Chairman of the Board?

Governor CLEMENT. Yes.

Mr. FOGARTY. Under the heading "Undistributed (Contingency)". I did not quite follow the testimony of General Vogel when he was before the committee. As I understood his testimony he made the claim that he could not find out what the people in the same activity were doing for TVA. When I asked him how long he had been there, he told me about 8 months. I thought it was very peculiar that a man in his position, being there 8 months, could not find out what the people were doing in that activity.

I find that he made this request of the Bureau of the Budget, and this is the first time since I have been a member of the Appropriations Committee, which is 9 years, I have ever seen the Bureau of the Budget make a request like this to the Congress, saying to the Chairman of the Board, here is $100,000 that you can have, if Congress will give it to you, for your use. I told him, in my opinion there was something about it that did not sound right to me, and to be perfectly frank with you, I think he knows it now, too. He did not have any real good justification for that $100,000. This is the first time, or one of the few times, that I ever heard of a man in his position on that side of the table requesting something in the budget, a change at least from the budget, and presumably for some other reason than what you believe that the funds might be used for.

That is the way I understood it.

Governor CLEMENT. I certainly appreciate your clarification of the facts, because it does add to the store of information which I had, which was naturally limited. And I would like to say—and I do not mean it sarcastically—but I think the facts will bear it out, I suppose that the Bureau of the Budget had reason to believe that turn about was fair play; they got him to change on a very important finance plan, and I suppose he could get them to change and add $100,000. But the facts bear out the fact that he did change his position.

We have taken a good bit of abuse about this TVA situation. We have had to fight our way every inch of the way in the last few years, and I see no reason why we should sit down there and receive $100,000, when we do not know what it is going to be used for; we cannot justify that $100,000 either, so we say you would be proper in knocking it out.

Mr. RABAUT. Thank you very much, Governor.

Governor CLEMENT. Thank you, gentlemen.

My experiences before all of these committees, when Congressman Phillips was chairman, and now that we have the distinguished new chairman, all of you have been very pleasant in spite of the fact that I always feel that I am in the presence of people who are so intelligent that I do not know whether we could stand up or not; I am always treated courteously, and I appreciate it very much.

I would like to repeat, if any individual member of this committee, or any of your colleagues, want any information, I will either come back to Washington personally or will send anybody you request, or I will send you any information immediately.

Thank you very much.

Mr. RABAUT. Thank you.

Mr. Cooper.

STATEMENT OF S. R. FINLEY

Mr. COOPER. Mr. Chairman, the next witness to be presented to the committee is Mr. S. R. Finley, general superintendent of the Electric Power Board of Chattanooga, Tenn.

Mr. RABAUT. Mr. Finley, the committee will be very glad to hear you at this time.

Mr. FINLEY. Thank you, Mr. Chairman.

I wish, according to practice, to identify myself, and then as briefly as I can outline my reasons for appearing before you. My name is S. R. Finley, of Chattanooga, Tenn., where I am general superintend-

ent of the electric power board, an independent agency of the city of Chattanooga. I am a graduate electrical and mechanical engineer and have been engaged in the electric public-utility field in all of its phases, both publicly and privately owned for 37 years.

My appearance is on behalf of my board, which serves a heavily industrialized area of some 500 square miles, part of which is in the State of Georgia. We have an area population of some 250,000 people, and in this area we serve 75,000 customers, about one-half of whom are within the city of Chattanooga and one-half outside of it. Our board's requirements for its customers are very large and we are the largest distributor of TVA power. In fiscal 1954, our board purchased 1,735,848,000 kilowatt-hours from TVA—for which we paid them $7,089,813 at an average rate of 4.08 mills per kilowatt-hour. Our purchased power requirement was 5.3 percent of TVA's total kilowatt-hour sales during that year and we paid to them 5.3 percent of the total income that TVA received from the electricity sales.

The TVA is our area's exclusive source of power, as it is to all of the TVA service area's 148 municipal and cooperative distributors of TVA power who serve some 1,333,000 customers. My appearance is also on behalf of the Tennessee Valley Public Power Association, which is an organization to which over 90 percent of the power distributors distributing TVA power being. In fiscal 1954, these 148 power distributors purchased 12 billion kilowatt-hours from TVA, which was 40 percent of the electricity which TVA sold, and these power distributors paid to TVA $52,732,616 for this electricity. Their payments amount to approximately 40 percent of TVA's electricity income.

I cite these figures to show we power distributors' relation to TVA and the importance to us of what happens in TVA's electrical future. This future as we see it, is in the hands of the Congress, and as ones most vitally concerned about it I assure you we appreciate the opportunity to be heard by your honorable committee.

Upon many occasions we have heard during the last 2½ years many statements from Washington about a "partnership policy" between the Federal Government and local agencies in the field of development and distribution of federally owned electric power resources. Such a condition is nothing new to us, and I would like to say that we favor such a partnership, and for nearly 20 years have had a successful example of such a policy to the benefit of both the Federal Government and the areas in which we live. At the end of fiscal 1954, we power distributors, that is, the local partners in the 20-year partnership, had $420,768,000 of assets in our 148 locally owned and operated municipal and cooperative power systems. The Federal Government, the TVA, our partner in this venture, at the end of fiscal 1954 had $968,365,000 of assets invested in its part of the partnership. Of this amount which the Federal Government had invested, some $253,914,000, or about 25 percent of it, had come from the earnings and income of TVA. Likewise, a substantial portion, about 38 percent of our 148 local systems' assets, had come from the earnings of our systems. As of the present time, both partners, the Federal Government through TVA and our local systems, are on a fair way to eventually having created their entire assets wholly from their net earnings.

However, we, one important part of this partnership, that is, the local agencies, have begun to have considerable worries and concern.

The last two sessions of the Congress have failed to provide authorization for any new generating capacity for the TVA, who is the generating and transmitting partner in this partnership, we being the distribution partner. This present Congress, if it follows the recommendations of the Bureau of the Budget, may also do likewise, and, I assure you, again, gentlemen, this possibility worries and concerns us.

Let me cite a few simple figures to show why we are concerned, why we are worried. Using the Bureau of the Budget's own statements, in 1958, unless additional generating capacity is authorized by this present Congress, TVA's assured capacity available to loads which it serves other than AEC will be 6 percent short of the loads it must serve at that time. The Bureau of the Budget frankly says that there would be available assured capacity—I am talking about the loads other than the AEC—of 7,033,000 kilowatts to serve a load estimate of 7,490,000 kilowatts. This is not a pleasant picture, nor a rosy view of our electrical future. And the amazing thing is that the Bureau of the Budget says this at a time when the Office of Defense Mobilization of our Nation has just announced an upward revision of its electric power expansion goal for the Nation, which has been in suspension since December 1953. This new revised goal of electrical capacity for our Nation by the end of 1958 is to 150 million kilowatts of capacity—an increase of 46 million kilowatts over that in service in this Nation at the end of 1954—and apparently none of this upward revision is to be for the Tennessee Valley service area. It is indeed startling that they assume—that is, the Bureau of the Budget—that our area, which should have at least the same surplus of assured generating capacity of loads to be served as the rest of the Nation—10 to 15 percent surplus—is not to have any surplus, but instead is going to be allowed to be 6 percent short. Frankly, we think these assumptions on the Bureau of the Budget's part are bad planning, and we are here to ask that you, the Congress, change these plans. I do not mean to be disrespectful when I say that our area has just about reached the limit of any confidence which we may have had in the Bureau of the Budget's adequately planning for our electrical future.

Now, what do the people closest to the real facts about this situation say—the ones whose opinion should be listened to as speaking based on a thorough knowledge of the situation? I am told in a press release, a majority of the members of the TVA Board of Directors asked the Bureau of the Budget for authorization this session of 950,000 kilowatts of new generating capacity, certainly a modest request. One member of the Board, the Chairman, dissented on this, but voted for and recommended that 650,000 kilowatts of added generating capacity be authorized, a more modest request. Both of these requests took into consideration the present assumption—not at all likely to be realized—that the Dixon-Yates 600,000-kilowatt plant would be available to serve the AEC. Yet, in the face of these requests, from the responsible directors of the TVA, the Bureau of the Budget makes no recommendation for a single kilowatt of additional generating capacity for TVA. It is our earnest request that when your honorable committee marks up the TVA appropriation bill you include in it 950,000 kilowatts of newly authorized generating capacity, or a minimum of 650,000 kilowatts, should your judgment dictate this instead.

We want no part of the Bureau of the Budget's suggestion that if the TVA load in 1958 exceeds its assured capacity—and this condition will certainly exist—the added needs can be purchased from outside sources. It is not a good condition to have the power supply for any area to be dependent upon sources foreign to that area, and which obviously have no responsibility for the area's economic development. Congress established this principle in 1935 when it established the Holding Company Act. At that time the Congress decided upon a basic principle that "integrated and coordinated operations" were the best condition for the public interest, that they protected the electric consumer best. Now, by the stroke of a pen, the Bureau of the Budget would vitiate this—they would turn back the clock—and make the Tennessee Valley service area dependent in the future upon out-of-the-area power sources who have fought the TVA and our area's economic development every step of the way for the last 22 years.

The Tennessee Valley Authority has been an efficiently operated Government institution. Its results compare favorably with, and in many ways exceed, the performance of similar privately owned institutions. The TVA has had an excellent performance record of planning, constructing and carrying out the will of the Congress, as expressed by the act creating it. The TVA has the confidence of the 5 million people in its 80,000 square-mile service area. I believe it has the confidence of the Nation, and has received worldwide acclaim as being at the top among our governmentally created institutions. It would not be good public policy to change the nature or being of TVA at this time, as the Bureau of the Budget's recommendations clearly indicate it wants to do. By being successful, TVA has made enemies of powerful vested interests who would destroy it, and the present recommendations of the Bureau of the Budget are a step in this direction.

For these additional generating units, as in the past, the power consumers of the Tennessee Valley are willing and want to pay rates necessary to cover their costs. We do not seek, and have not received, any Federal bounty toward our electricity costs from the Federal Government. Many of us believe that the present financial arrangements of the TVA are fair and equitable—and have been a good business proposition for the Federal Government. However, when TVA recently submitted a report outlining alternative means of financing its future power supply needs, to be different from the present method of appropriated funds, we, the people of the area, after a thorough study of these proposals, expressed our willingness to have these changes made. It is apparent now that lack of time may not permit these changes in the TVA Act to be made during this session of the Congress. But such an important thing as provision for the Tennessee Valley's future power needs should not now be held up on that account.

In 1952 a candidate for the presidency stood before our people in the Tennessee Valley asking their support. He praised the Tennessee Valley Authority, said it was doing a good job—he did not at that time call it "creeping socialism"—and he further said that it, the TVA, would continue to be operated at maximum efficiency. We feel, and have felt, that this promise should be carried out. It cannot be done by turning over TVA's future power needs to be subject to the mercies and prices of surrounding private utilities as the Bureau of

the Budget frankly states a belief should be done. This continuation of TVA at its maximum efficiency can best be done by the Congress authorizing the needed additional generating units which the TVA Board has asked for at this session of the Congress.

Mr. RABAUT. Thank you, Mr. Finley.

Mr. FINLEY. Thank you.

Mr. PHILLIPS. Mr. Finley, if our friend, Mr. Cotton, were here, he would have extended his good wishes.

Mr. FINLEY. Yes.

Mr. PHILLIPS. He has left us, as you know.

Mr. FINLEY. Yes, and will you tell him that I missed him.

Mr. PHILLIPS. On page 2, where you give the figures $968,365,000 you will concur that that does not include quite all of the expenses that private enterprise would have been compelled to write into the picture. That is, the interest did not equal the amount of interest paid by the Federal Government for the money, nor did it include all of the taxes and so forth, so there would have been a little different picture—rather than a quarter of the money being derived from the earnings of the TVA, it would have been practically none?

Mr. FINLEY. Well, the private utilities, sir, would not have been allowed to reinvest their earnings; they are not allowed to do that, sir.

Mr. PHILLIPS. Now, on page 3, there is a slight ambiguity here, in the second paragraph, beginning in line 4, "other than AEC." The figures presented to this committee in all years have included the estimate for the AEC—that is, the power, and I think you intended it to read that way.

I am not challenging your statement; I think it is a slight ambiguity, is it not?

Mr. FINLEY. I believe, Congressman, the Bureau of the Budget, or the President's message said that for loads other than the AEC, that there would be available an assured capacity of 7,033,000 kilowatts. I believe the Bureau of the Budget used the words "for loads other than the AEC."

Mr. PHILLIPS. As you know, the previous figures have included the probable demands of the AEC, which are somewhat intangible because we do not know how much they will want, and you do not know in Chattanooga.

Mr. FINLEY. I do not know the exact figures, but it seems to me that the requirement of the TVA—I mean the AEC—in 1958 will be in the neighborhood of 3 million kilowatts. And at that time TVA will have roughly 10 million, so I was merely pointing out what would be available for load other than AEC.

Mr. PHILLIPS. If these figures of probable demand, which you say were made by the Bureau of the Budget, are based on the estimate of the TVA itself, which I presume they are, I think you should know that the future needs of the TVA have been overestimated every year in the last 5 or more years. Those figures are in the hearings for this year and they will show the overestimations, so it is doubtful that the overdemand, if there is one at all, will be as large as you say it will be.

Mr. FINLEY. Well, I only take their estimate as being the correct figures.

Mr. PHILLIPS. They have given themselves a little cushion on this probable demand.

On page 4, at the very bottom of the page, you say you want no part of the Bureau of the Budget's suggestion, and the suggestion is that it be purchased from outside sources, but that does not concur, Mr. Finley, with the customary practice of the TVA. Last year, when you were up here, you recall, the TVA was buying about 14 percent of its power from outside sources; is that right?

Mr. FINLEY. If I may say, sir, that is because the Congress had not provided the generating capacity needed to carry its load.

Mr. PHILLIPS. Well, if the Congress continued to refuse to appropriate money to build steamplants, then of course, the TVA would keep on buying power from outside; is that a good solution?

Mr. FINLEY. No, I would not agree with that, Mr. Phillips; I think that is a very bad solution.

Mr. PHILLIPS. I do not know any other State in the United States which has been more insistent on States rights than the State of Tennessee—now how do you adjust this situation in which a man by the name of States-rights Finley comes up here and wants a handout from the Government every year?

Mr. FINLEY. Well I do not like the "handout," but I might explain my name by saying that I was born in South Carolina, in York County, and Andrew Jackson was born in my county, and my people were Democrats long before Andrew Jackson was born.

Mr. RABAUT. Thank you very much, Mr. Finley.

Mr. FINLEY. Thank you.

Mr. RABAUT. Mr. Cooper.

STATEMENT OF JAMES N. BLOODWORTH

Mr. COOPER. Mr. Chairman, I would like to present next as a witness Mr. James N. Bloodworth, an attorney from the State electric system of Decatur, Ala. As I stated earlier, Mr. Bloodworth has to catch a plane and we are calling him a little out of order.

Mr. RABAUT. Mr. Bloodworth, the committee will be pleased to hear you at this time.

Mr. BLOODWORTH. Thank you, Mr. Chairman.

Mr. Chairman and gentlemen of the committee, I am appearing before you today as the representative of the city of Decatur, situated in northern Alabama. I am an attorney but my appearance before you here today is not a "paid performance." I am personally interested, and our people are primarily interested, in public power as provided by the Tennessee Valley Authority. My being here is one of those many services which the members of the bar are called upon to perform from time to time. Last spring I had the privilege of appearing before the Hoover task force on water resources in Chattanooga, Tenn. I recall that one of the gentlemen on the task force asked me who was paying me to appear and testify. Of course, a lawyer never likes to admit that his services are free, but I must confess to you gentlemen today that no one has paid me to appear.

Mr. RABAUT. And you are in that status today?

Mr. BLOODWORTH. Yes. I have to confess twice. I also would like to state to you gentlemen that I had the privilege of appearing before the committee, I believe in the 83d Congress when Congressman

Phillips was the chairman of this subcommittee, and I believe Congressman Cotton was then a member of that committee, and he has now stepped up to the Senate.

Mr. PHILLIPS. We have promoted several people, Mr. Gore, Mr. Case, Mr. Cotton, and several others, from the same subcommittee.

Mr. BLOODWORTH. Yes. And I want to again take this opportunity to thank Congressman Phillips, then chairman of the subcommittee, for its courteous attention; they were very gracious to us and we again want to thank you for the privilege of appearing before you.

Gentlemen of the committee, if I understand the mission or purpose of this subcommittee, it is to seek the facts regarding the TVA and to consider and recommend to the committee—I started to say the committee as a whole, but I believe it is the full committee—a report on the TVA appropriation bill.

Now, my being here is simply to say to you, as one member of the public at large, in the Tennessee Valley, that we request your considering and granting an initial appropriation for additional steam-generating units to be constructed by the Tennessee Valley Authority to satisfy our ever-increasing requirements.

It is my understanding, as Mr. Finley stated, that all 3 of the TVA directors had recommended to the Bureau of the Budget that new units for generating power be provided. I believe that the newspapers reported that Directors Patty and Curtis recommended that 6 new units be provided, and Chairman Vogel, General Vogel, recommended 4 units. And, as I understand from the newspapers, which, of course, is our principal source of information, they unanimously recommended the 4 units. We feel that the calculated judgment of these gentlemen who, after all, are charged with the duty and responsibility of administering the Authority, should go a long way toward convincing you gentlemen of the additional power needs of the system.

Now, if a witness from the valley itself can be any help, it would be to point out the phenomenal power needs and the growth of power demands in our section, city, or of the cooperatives. Now, our utility system is municipally owned in Decatur, and it only distributes power within the State, contrary to the factors in Chattanooga and some of the other cities, where it is distributed throughout the county.

In 1940, soon after we became a municipal electric utility, having purchased the privately owned utility, Decatur was using 20 million kilowatts of electricity. In 1948, when, I believe, it was the 80th Congress, studied the need for the first and initial appropriation for the new Johnsonville steam plant, Decatur was then using 120 million kilowatts of electricity, 6 times that of 1940.

In 1954 the city of Decatur electric system sold to its citizens over 160 million kilowatts of electricity. In other words, since 1940 the total annual consumption of electricity increased 8 times, from 20 million kilowatts per year to over 160 million.

Likewise, the average annual use of electricity has increased.

In 1940 the average annual use per customer was 1,640 kilowatt-hours. In 1948 this had increased to 3,700 kilowatt-hours; by 1954 this figure had climbed to 8,236 kilowatt-hours. Now, the national average, I am informed, during 1954 was 2,545.

To what do we attribute this growth? We believe it is due, first, to the tremendously increased use of electricity by our city residents. And I would like to point out that that has permitted our citizens to buy electric refrigerators, air-conditioning units, and electric ranges, and a number of other electrical appliances, to be placed in our homes; and, of course, most of them have been bought from manufacturing concerns in Detroit and in California, and in Illinois, and in other districts and States that the gentlemen on your side of the table represent.

In fact, I suppose that our city is typical. I do not remember all of the figures offhand, but approximately, I believe, of all of our homes, about 9 out of 10 have electric refrigerators, and probably the same number, electric ranges, so this great increased use of electricity has permitted them to buy these projects that they heretofore were not able to secure.

We also attribute our growth in electric power demands to our long-overdue industrial growth. We have now become a market area. Many manufacturing plants have grown up in order to be closer to sources of raw materials and markets. As an example, the Worthington Corp., with which, no doubt, you gentlemen are familiar, long a leader in the manufacture of commercial pumps, has established the first plant manufacturing air conditioners and air-conditioner equipment in the South.

Our city electric system is one of the ninety-odd municipal electric distribution systems in the TVA area, which, of course, buys power directly from the TVA. I think perhaps it is a typical one. As I understand, the question has been asked as to whether our municipally owned utility system pays taxes, and although I do not claim that this is exactly germane to the question you gentlemen are studying, I do think it provides some information and elucidation that should be provided. It does pay taxes. It pays what is known as payment in lieu of taxes. In fact, in 1954, it paid over $72,000 as payment in lieu of taxes to our municipality and our county; and that figure of $72,000 is more than the combined taxes paid by the telephone, the railroad utilities—and we have two, the Louisville & Nashville and the Southern—which have taxpaying properties there, as well as the taxes paid by one of our largest industrial plants, Goodyear-Decatur Mills, and the in lieu of taxpayments made by our gas and water systems, which also are municipally owned and combined.

During the last year of its operation, the private power utility only paid $7,500 in taxes.

Today, due to the growth of the system, it would naturally pay more. It is estimated, however, that on the usual basis of paying taxes it would only pay about $20,000. So, as you gentlemen can see, our system certainly more than pays its way. There are other advantages which are not so apparent. Our local system furnishes electric street lighting at a lower charge and through its earnings has built and maintained a modern and attractive utility building housing the electric, gas, and water departments.

In conclusion, gentlemen, let me state that I trust that I have been able to present one example of a typical industrial city in the Tennessee Valley and its greatly increased demands for electric power. The need seems indisputable. The question seems to be the method of

providing the power requirements. I should like to state at this point that I believe I speak for most of our citizens when I say we have no apology to make in requesting that you provide additional funds for additional steam generating capacity for TVA. We think and believe that the National Government since it owns TVA has a natural obligation to provide this additional power so that its municipal customers like Decatur, Ala., can have more power to sell.

We know that other financing methods have been suggested. I am not familiar with them, though I have read of them in the daily newspapers. However, I personally believe and should like to strongly suggest to the committee that you gentlemen search for a solution to provide funds for new power development from the Federal Government itself. We do not ask for any handout in Federal funds nor any subsidy to our region. After all, the Federal Government spends money for harbor development where harbors exist, it spends money for river navigation where rivers are capable of being developed for navigation. It spends money for reclamation projects where the need is. It spends money for flood control where floods are greatest.

We in the Tennessee Valley do not condemn this; we applaud it. The Federal Government has been developing the Tennessee Valley for 22 years. We ask that you continue that development. We ask that you provide the funds for its development, knowing that under the TVA Act the total investment of the Federal Government in the power system will be fully repaid to the Government. We feel the acid test of Federal expenditures is whether the Nation gets a full dollar's worth for each dollar of investment. We believe this has been accomplished in the valley.

Mr. RABAUT. Thank you, Mr. Bloodworth. Are there any questions? If not, Mr. Cooper, we will hear the next witness.

Mr. COOPER. The next witness to be presented is Mr. W. H. Saxton, manager, Tallachatchie Valley Electric Power Association, Batesville, Miss.

STATEMENT OF W. H. SAXTON

Mr. SAXTON. My purpose today is to tell you something of what the TVA means to the people in north Mississippi. My remarks will be concerned primarily with the growth in use of electric service in that part of Mississippi which is served by TVA power.

TVA SERVICE AREA IN MISSISSIPPI

The area in north Mississippi that is now served by the municipal and cooperative distributors of TVA power includes all or major portions of 31 counties. It is an area of 17,000 square miles, representing about one-third of the area of the entire State. The population is roughly equal to about one-third of the State's total. It is primarily a rural and farming area, and Columbus, with a population of about 20,000 is the largest city.

The area is served by 14 municipal electric systems and 14 rural electric power associations, all of which purchase their supply of power from the TVA.

RURAL ELECTRIFICATION PIONEERED BY TVA IN NORTH MISSISSIPPI

The relationship between the people in north Mississippi and the TVA has existed since the beginning of TVA and has been very satisfactory. Northeast Mississippi was the first large area to receive a supply of TVA power. The city of Tupelo, which had been operating its own municipal electric system since the turn of the century, was the first town to contract for a supply of TVA power. The Alcorn County Electric Power Association was the first rural electric cooperative in the TVA area and is believed to be the first in the United States. It was organized by the citizens of Alcorn County in 1934 in cooperation with TVA, and is the prototype of the REA cooperatives that have since spread throughout the entire Nation. It was in Mississippi that TVA and the distributors of TVA power were first able to secure a reasonably wide market area in which to distribute power. And it was in Mississippi that TVA pioneered in the design and construction of low-cost rural lines so that the farms and small communities might economically be served. Thus, the people in our area are probably more familiar with what TVA has meant to rural people, not only our State but of the Nation, than people of other sections.

EMPHASIS ON RURAL AND FARM ELECTRIFICATION

At the time TVA power first reached Mississippi, only 1 farm out of every 100 had electricity. We were in last place among the 48 States. A few farms that did have electricity were located on the outskirts of towns and cities, so farm electrification in the real meaning of the word was virtually nonexistent. There were even quite a few towns of 300 to 500 population, which had no electric service 20 years ago.

Because of the nature of the area and the dependence of the people upon agriculture, it was only natural that the power distributors and TVA throughout the last 20 years have placed major emphasis on getting electricity out into the rural areas. This effort has been very successful. Though statistics show that Mississippi still ranks next to the bottom among the 48 States, we are proud that about 77.5 percent of farms are now electrified in the entire State. We are even more proud that in the TVA area of Mississippi that approximately 80 percent of the farm homes have electricity. In the area served by my association, approximately 95 percent of the rural homes have electric service.

GROWTH IN CONSUMERS AND USE OF ELECTRICITY

I would like to review with you the growth in the use of electricity throughout the area in Mississippi that is served with TVA power. It is well to make electric service available, but it is more important to make it available at a cost to the consumer that permits the use of electricity to do the many household and farm chores.

I will use calendar year 1941 as the base year. Naturally, a more impressive record could be made by going back to 1933, but we ran into difficulties in obtaining accurate data on power use in this area for that year. The year 1941 offers a convenient base because that is the first full year of operation for the area in our State served by TVA power. The other years of comparison are 1945, which is peak wartime year in electricity consumption; 1952, 1954, and 1957 estimate.

Growth in consumers and average use

Residential	Number of consumers	Average use
		Kilowatt-hours
1941	35,000	1,300
1945	47,000	1,445
1954	124,000	3,143
1957 estimate	137,000	4,000

Sale of electricity in the TVA area of Mississippi

[Millions of kilowatt-hours]

	Calendar year 1941	Calendar year 1945	Calendar year 1954	Estimate, 1957
Residential	42	64	384	600
Commercial and industrial	54	82	[1] 280	[1] 500
Total	96	146	664	1,100
Farm sales included in residential	10	18	187	280

[1] The Oldbury Chemical Co. used 21.5 million kilowatt-hours in 1954; the 1957 estimate includes 150 million kilowatt-hours for Oldbury.

The homes of the TVA power service area, which has less than one-third of the State's population, are using more than 40 percent of all the electricity used by the residences in the entire State.

POWER SUPPLY

For a number of years our area has experienced a great growth in the use of electric service. There is evidence on every hand of a corresponding increase in the standard of living of the people consuming this electricity. We now stand on the threshold of an era of still greater growth, particularly in the field of industry and commerce. To meet this growth we must look to TVA to provide the necessary power. The distributors of TVA power have large investments in distribution facilities made on the premises of a partnership agreement to provide and distribute electricity to the consumers in our area.

My particular operation is on the fringe of the TVA area. Our association was organized in 1937, but did not go into operation until 1939. I will not detail the obstacles that were placed in our path during the organizational period, and early years of operation, by those opposed to our way of distributing power. Suffice it to say that without the wholehearted cooperation of the TVA many now receiving electric service would not have it. Nor could they have enjoyed the use of electric service that they do today on the rates charged by our neighboring utility. That is why we are disturbed about the Dixon Yates or any other scheme to provide outside generation for the TVA area. We know from experience that we can exist with the private utilities only so long as we are not dependent upon them in any way.

Mr. RABAUT. Thank you, Mr. Saxton. Are there any questions?

If not, Mr. Cooper, we will hear from your next witness.

Mr. COOPER. Mr. Chairman, the next witness is Mrs. W. C. Worthy, of Fyffe, Ala., member of the board of the Sand Mountain Electric Cooperative, Fort Payne, Ala.

STATEMENT OF MRS. W. C. WORTHY

Mrs. WORTHY. I am Mrs. W. C. Worthy, a housewife of Fyffe, Ala., a small community on the Sand Mountain plateau in DeKalb County in the northeastern part of Alabama. My husband is a farmer and retired rural mail carrier from Fyffe post office, and we have lived in this community 35 years. We raised a family of 4 boys and 1 girl.

Mr. RABAUT. Good for you.

Mrs. WORTHY. Most of them were grown when we first received electric service in 1935.

When the Sand Mountin Electric Cooperative was organized in 1940 to bring electric service to our area, I was asked to serve on the board as one of the incorporating members and am happy to say that I have been reelected to the board each year since. I believe that I am the only lady on the board of a TVA Cooperative, though I understand there are others serving on other REA Co-ops in the Nation. It, of course, has been my aim these years to look after the interest of all the members in my area, but more especially the interest of the women. We lived without any electric service, that is central station service, anywhere in our area until 1935 when TVA began to build some lines in the valley and in order to try to stop the threat of TVA expansion the Alabama Power Co. built a few small rural lines in the Sand Mountain area. These lines brought a few farmers lights, but the rates were so high that we could not afford other appliances and I doubt, if on 200 miles of lines in the Sand Mountain area in 1940, that there were as many as 50 electric refrigerators among some 700 or 800 electric consumers As soon as the co-op took over we began expanding and did build some 125 miles of lines before the war stopped construction. Since the war Sand Mountain Electric Cooperative has built some 1,350 miles of line and served an additional 8,000 members so that it is now serving a total number of 10,500.

This means that the women in something over 10,000 homes no longer have to fill kerosene lamps and clean the globes in order to have lights nor do they have to carry the milk and butter to the spring or well in order to keep it from melting down on a hot summer day.

It is hard to say just where electricity means the most to me, but our electric water system that brings the water at the turn of a faucet is, I believe, the most important. An electric water heater makes plenty of hot water in one faucet while the adjoining one is cold. This makes my cleaning and kitchen work much easier, so that I still carry on without any help whereas by old methods I doubt that I would be able to do so.

My modern range is such a labor saver that it is impossible to describe what it means. I have almost forgotten carrying in wood and carrying out ashes and cleaning up, that took time in addition to the time of preparing and cooking food when the fire had to be watched to see that the heat was maintained. Now, I merely set the automatic controls and go about my other work, knowing that the proper temperature is maintained in the oven and the meal will be perfectly cooked when the time has expired. Of course, the electric refrigerator enables me to keep food available that it was impossible to keep in the old days and at the same time save much food that was formerly thrown away.

On Sunday I can put the roast in the oven and go to church and when I get back it is ready for dinner.

The electric food freezer makes our homegrown foods available the year around without the necessity for spending hours and days of hot work over a stove canning and preserving food as of old. The fresh fruits and vegetables which my family enjoy the year around is a great help in maintaining health. For those families with growing children it means so much for their proper growth and development, as well as being a timesaver of the housewife that it is hard to see how one could keep house now without a home freezer.

The most general appliance used in our area and one of the first secured is an electric washing machine and this too is a great labor saver for the women of our area. Many of whom have worn themselves out before the days of electricity are now able with the help of electric washers to carry on and keep their family's clothes clean when it would not be possible were it not for electric washers. Many of our members have automatic washers since they have installed an electric water system.

I might say here that my grandmother used to dip water from a spring with a hickory stick. My mother drew water from the well and used the rubboard, and I use the ringer-type machine. Of course, I have running water. My daughters and daughters-in-law place their clothes in the washer and push a button, so that does mean something.

Mr. RABAUT. And some people want to be Communists.

Mrs. WORTHY. I would like to mention some of the smaller uses, of course, lighting is the first use made of electricity on Sand Mountain and now we are installing IES lighting, which protects our family's eyes and allows the children to study their lessons without danger of having to wear glasses before they are grown. We are rewiring and lighting our schools to meet IES standards.

Mr. RABAUT. What is meant by "IES"?

Mrs. WORTHY. Illuminating engineering standards.

The electric iron, of course, runs right along with the washer and the vacuum cleaner helps with house cleaning, while the food mixer takes care of more hard work in the kitchen. And nearly every housewife saves 1 to 3 hours per day, or rather in most cases the children who are usually assigned that boresome task of churning with a hand dasher when the electric churn takes over.

Of course, nearly everyone has a radio and many have both AM and FM sets. Within the last 12 to 18 months television stations have been erected that serve the Sand Mountain area, and now television is being installed in many homes. This brings the news and sights of the world, to us people in the rural area, that have not heretofore been available and means much in an educational way. In fact we are now receiving the Alabama educational programs from our education station on Cheah Mountain.

You must realize that this means that we are increasing our use of electricity and the average residential member of the Sand Mountain Electric Cooperative is now using approximately 350 kilowatt-hours per month and will soon use more so it is imperative that TVA be allowed to expand and build the necessary generating facilities to meet this increasing demand. Our cooperative is now planning an expansion program to make capacity available in another 10 years to serve

12,000 members 1,100 kilowatt-hours per month. I sincerely hope that you can see fit to approve the construction of those plants for which TVA has asked to meet our growing needs.

We want TVA preserved and expanded to meet the growing needs of our area, for abundant low-cost electric power has changed our way of life, more especially that of the women, for we have always done our own work. This, of course left little time for other things until electricity took over the drudgery. Now we look forward to more freedom as electricity assumes more and more of our time consuming tasks.

And now, I want to thank you for hearing my story which I have tried to hold within the 10 minutes allowed, though I could talk much longer about TVA and electricity. Thank you, gentlemen.

Mr. RABAUT. Mrs. Worthy, it is very proper that you should read such a paper. It gives to all of us an intimate picture of the progress in America; how much we have to be thankful for; how much drudgery has been taken out of life; how much more time is given to a mother for her children and to the worthy purposes of family life. It is refreshing to see someone come here, as you have today, and tell the committee of this progress in fine, simple, understandable language. You are to be commended for your devotion to others.

Mrs. WORTHY. Thank you.

Mr. RABAUT. Who is your representative?

Mrs. WORTHY. Mr. Albert Rains. He grew up on the mountain where I did.

Mr. RABAUT. That mountain produced some pretty nice people.

You may introduce your next witness, Mr. Cooper.

Mr. COOPER. Mr. Chairman, the next witness to be presented is Mr. Edward Ferguson, superintendent of the Murray Electric System of Murray, Ky.

STATEMENT OF EDWARD FERGUSON

Mr. FERGUSON. My name is Edward Ferguson. I am superintendent of the Murray Electric System of Murray, Ky., a municipal corporation created, organized, and existing under and by virtue of the laws of the Commonwealth of Kentucky.

Murray is a town of 10,000 population located in the southwest section of Kentucky. In 1942 the city of Murray purchased the electric distribution facilities formerly owned and operated by the Kentucky Tennessee Light & Power Co., organized the Murray Electric system, and entered into a 20-year contract with the Tennessee Valley Authority for the purchase of power at wholesale rates.

For the past 13 years both parties to this contract have abided faithfully by the terms and conditions of the contract, and in so doing have succeeded remarkedly well in bringing to the people of Murray electric energy in sufficient quantities and at reasonable rates. We would like to see this partnership arrangement continued without any major changes.

In 1945 at the end of World War II, the Murray Electric system had assets of approximately $300,000, the people of Murray that year used 4,774,000 kilowatt-hours for which they paid $116,000 or an average of 2.4 cents per kilowatt-hour; 37 percent of the $116,000 revenue was paid to TVA for purchased power. This year in 1955, just 10 years later, the people of Murray will use 42 million kilowatt-hours

for which they will pay $378,000 or an average of 0.9 cents per kilowatt-hour which is less than one-half of what they were paying 10 years ago. Our purchased power from TVA this year will be approximately 50 percent of our revenue, and our assets today are approximately $1 million. I think that perhaps you may get a better picture of the comparison, if I should tell you that the people of Murray used more electricity in the month of February 1955 than they did for the entire year 1945 and at much less than one-half the cost.

One thing that should be borne in mind is the fact that while our average retail price of electricity is less than one-half of what it was 10 years ago, the rate at which we purchase electricity from TVA has not changed. We can hardly see any justification of being accused of receiving something for nothing when we pay TVA 50 percent of our revenue for purchased power. In our opinion it only proves that the only efficient way for the generation and transmission of electric energy is by a large integrated system, and the only efficient way for the distribution of this power is by small locally owned and operated distribution systems. I would venture to say that if the TVA was operating the distribution systems throughout their area that the rates to the ultimate consumer would not be much if any lower than the national average, and I would also venture to say that if all of the power generated and transmitted by the TVA were sold to neighboring private utilities at the rates which we are paying there would not be one iota difference in their present retail rates.

Our very existence depends upon our being able to purchase wholesale power at reasonable rates: this we can only do from a large integrated power system dealing only in wholesale supply, the TVA is the outstanding example of this type of system in the world.

It is generally recognized that small generating plants are inefficient and expensive to operate. If we should be forced into the generation of our own power, the low retail electric rates that we have been able to establish through our efficient distribution system would be more than offset by the added expense of operating a small generation station, and a substantial increase in retail rates would be inevitable. Such an increase in rates would be a calamity to the peoples of Murray. For one thing, approximately 25 percent of our customers use electric energy for home heating systems, this is a direct result of low-cost electricity being competitive with oil or gas-fired heating systems. These people have no other means of heating their homes, and should our rates be increased to the national average, most of them simply could not afford the cost. For 25 percent of the homes in any town or city to be forced to remove one type of heating system and install a completely different type because they could not afford the additional operating costs would be disastrous for them.

The increase in the use of electricity in our area has not been the result of any sales or promotional programs, but it has been the direct result of good service and a sufficient supply. We deal only in electric power and service, we do not merchandise anything.

I often read articles written by people from other sections of the country accusing us of being the fair-haired child of the Government, and that we are practically getting our electric power free. We, of course, pay a fair rate for our power and we expect to continue to pay a fair rate, we would not like to be forced into a position of paying a

prohibitive rate. In fact, if these people would spend more time in making a study of their own high rates, rather than trying to explain our low rates, the entire country would benefit from such a move. We have no secrets and if they would take the time to come visit with us, we will be more than happy to show them how they too could benefit from low electric rates. We will concede that the Creator was on our side when He located the Tennessee River in our area, but there are other areas of undeveloped natural resources in this great country which when developed for the benefit of the people in those areas will also be an asset to the entire Nation, just as the development of the Tennessee River has benefited the entire Nation.

We have never overestimated our power requirement. In fact, 4 years ago we made a system study of improvements and additions that would serve our area adequately through the year 1965. We thought that we were being most generous with our estimates, however, it now seems certain that next year we will reach the load limitations that we had predicted for 1965. Such phenominal growth is not restricted to our immediate area, but is to be found throughout the Tennessee Valley. In view of this it is no small wonder that we are becoming concerned with our wholesale supply of power, and we would like to see some definite and positive provisions made whereby the TVA will continue to expand and be in a position to supply our future power requirements.

Our slogan at the present is that we will serve any load at any time anywhere in our area, we would like to be able to have the same slogan 10, 50, or 100 years from now.

Mr. RABAUT. Thank you. Are there any questions? If not, Mr. Cooper, you may introduce your next witness.

Mr. COOPER. The next witness to be presented is Mr. Chester S. Rainwater, Jr., an attorney of Dandridge, Tenn.

STATEMENT OF CHESTER S. RAINWATER, JR.

Mr. RAINWATER. I am Chester S. Rainwater, Jr., an attorney of Dandridge, Tenn. I am a member of the board of trustees of the Appalachian Electric Cooperative of Jefferson City, Tenn.

I come before you today as a private citizen in behalf of the budget request of the Tennessee Valley Authority. I am not qualified to, and do not pretend to be able to discuss in detail the various items of the TVA budget. This must be done by those who by reason of their position, experience, knowledge, and study know the requirements of this great agency.

But rather I prefer to bring to your attention the hopes, wishes, and desires of the peoples of the Tennessee Valley area in their relation to TVA and thereby to point out the absolute necessity for this Congress to adopt and appropriate the funds requested in the TVA budget.

It has been my privilege to live my entire life in the heart of the Tennessee Valley, just a stone's throw from the first great undertaking of the TVA, Norris Dam, and my home today is on the very shores of Douglas Lake. I have seen and followed the progress and development of this great agency since its inception, and for a period of about 1 year during 1941 and 1942 I was an employee in the Land Acquisition Department. Prior to TVA ours was a rich farming area sustained primarily by expansive river bottoms which were so fertile that ferti-

lizer and today's improved farming methods were not needed to produce bountiful crops. We were plagued only by periodic floods on the various rivers. Upon the advent of TVA and the building of the many dams, this rich and fertile river bottom land became reservoirs for water storage and our peoples were compelled to change their economy from that of agriculture primarily to one of industrialization. To the everlasting credit of the peoples of the valley and to their ingenuity, this change was accomplished with the minimum of lost motion, ably assisted by the Tennessee Valley Authority. As TVA further developed, further industrialization took place to take up the loss of agriculture as the No. 1 source of income, and to the extent that today, while agriculture is still important, it must yield to industry as the primary source of economic life.

The development and progress of TVA and its power generating facilities has been largely responsible for this industrialization and together with the Rural Electrification Administration has made electric power available to all persons everywhere in the valley and has increased their standards of living and their ability to absorb the goods and products produced by a great nation. In addition, this great agency has made it possible for our Government to construct and maintain the laboratories, research, development, and production of the most vital of defense weapons, the atomic and hydrogen bombs.

TVA in its inception may have been local in character, but changing times and conditions have wrought changes in TVA's place in history and today it stands as one of the bulwarks for freedom for a free peoples in its furnishing of the electric lifeline to atomic progress, aluminum for aircraft, research to further conquer space, and the myriad other related manufacturing and development industries, so that in the overall program looking to the welfare and public good of the entire Nation, TVA must be considered as national and of vital concern to all our peoples.

The peoples of the Tennessee Valley, which includes parts of North Carolina, Alabama, Mississippi, Georgia, and Kentucky, as well as Tennessee, are of all races, are of all religious faiths, are from all walks of life, are of all political faiths, are of all social standings, and together they comprise the average American community, no better, perhaps, but certainly no worse than any other section of our great country. The peoples of the valley are, by and large, of one mind, that is, that a strong and healthy TVA is absolutely necessary to the continued progress and well-being of the valley particularly, and to the Nation as a whole. This feeling transcends party, social, and business lines.

It is interesting to note that the Tennessee Valley contains what is generally thought to be the strongest (percentagewise) Republican congressional district in the country—I might add I'm a Republican from that district—and nearby are congressional districts wherein a Republican can rarely be found. It might then be concluded by some who are unfamiliar with the situation that TVA is a partisan political issue—that it is the child of one party and the orphan of the other. Nothing could be further from the truth. The peoples of the valley are solidly behind TVA and are anxiously awaiting word from this committee that TVA can and will continue to shoulder its responsibility to the valley and to the Nation. In order to do so, it must have the appropriations necessary to keep abreast of this

fast-moving world. To stand still is to invite disaster, and this is just as true with a vital Government agency as it is to an army in the field.

Government defense installations such as the Atomic Energy Commission, the Arnold Development and Research Center, and the ordnance works are expanding at a tremendous rate, as well as such vital industries as aluminum and zinc, and are requiring ever-increasing amounts of electric energy. TVA cannot continue to supply these demands while standing still. More generating capacity is vitally needed, and all will agree that by installing additional units in already existing plants, that not only time, but money as well, can be saved. Time is of the essence—lost time can never be regained. It is urgent that immediate action be taken.

I respectfully request and urge, on behalf of the peoples of the Tennessee Valley and the peoples of the entire United States, that this committee give favorable consideration to the request of the TVA for funds with which to continue its development so that it may continue to carry out its obligation to America.

Mr. RABAUT. Thank you very much, Mr. Rainwater. Are there any questions?

If not, the committee will recess until 2 o'clock this afternoon.

AFTERNOON SESSION

Mr. RABAUT. The committee will be in order.

The gentleman from Tennessee, Mr. Cooper, is recognized.

Mr. COOPER. Mr. Chairman, I appreciate the privilege and have the honor of now presenting the Honorable George R. Dempster, mayor of the city of Knoxville, who will appear as the next witness.

STATEMENT OF MAYOR GEORGE R. DEMPSTER

Mr. DEMPSTER. Mr. Chairman and gentlemen of the committee, I want to express my appreciation for your courtesy. I feel like a Tennessee snowbird up here trying to talk to a bunch of eagles like you people, but I do want to present our side of the case as best I can.

I am George R. Dempster, manufacturer, mayor of Knoxville, Tenn., and president of Citizens for TVA, Inc., a grassroots organization of some 40,000 members in 24 States. Citizens for TVA seeks to rally national support for TVA as an institution of great national value and to work for the operation and maintenance of TVA at maximum efficiency.

The TVA budget presently before you is the second successive budget carrying absolutely no funds for the construction of new power generating capacity. The recommended sum is 77 percent below the appropriation for fiscal 1955, which in turn was 25 percent below the appropriation for fiscal 1954. It is the lowest TVA budget in 20 years, and yet there is a steady increase in the demand for electricity.

For over 2 years we have been trying to figure out which of the present policies this niggardly treatment of TVA falls under—moderate, progressivism, progressive moderation, dynamic conservatism, agonizing reappraisal, or massive retaliation.

Whatever it is, it isn't partnership. Partnership is what we have had in the Tennessee Valley for 20 years and which has helped make

TVA great. It is a true partnership between the people and their Government, with the people's investment in power-distribution facilities equaling the Federal investment in generating and transmission facilities to serve domestic and industrial demand. The return on the Federal power investment over all these years has averaged 4 percent.

Surely this administration must, in its more candid moments, recognize that the Government does not have a better deal anywhere than it has in TVA. Certainly it is far better than the Dixon-Yates deal, which has more fine print than the Holy Bible and more loopholes than the walls of Davy Crockett's Alamo.

There is every reason in the world to maintain TVA at maximum efficiency by Federal investment. TVA is a creature of Congress itself—a national institution producing national benefits. You gentlemen are aware of these benefits; you have heard them listed and described year after year in appropriations hearings and in floor debate.

Yet we have seen Congress itself, particularly in the absence of a strong lead from the White House, fail to appropriate sufficient funds to build the powerplants needed to meet the annual increase in demand in the Tennessee Valley.

For a number of years TVA has studied alternate means of raising capital. As you know, it has formulated a number of recommendations which we deeply hope will be accepted by Congress at this present session.

These recommendations are not, of course, before this committee. Here we are talking about appropriations.

It was recently announced (not by TVA) that the TVA Board had asked the Bureau of the Budget for appropriations for 650,000 kilowatts of additional generating capacity for fiscal 1956. This was to be provided by new units at Johnsonville, Gallatin, and John Sevier. Even this figure, on which there was unanimous agreement on the TVA Board, is some 300,000 kilowatts short of what 2 of the 3 Board members favored. That is the majority of the Board.

The Fulton plant was not included because, on paper at least, the 600,000 kilowatts from the Dixon-Yates plant was to take care of the additional needs.

But, gentlemen, in my opinion, power from the West Memphis plant will never flow through TVA lines under the infamous Dixon-Yates deal. It has been made clear in a number of ways that this uneconomical, misbegotten deal will not be allowed to corrupt the TVA public power system regardless of the President's curious insistence on it.

Citizens for TVA urge that this committee make funds available to start the Fulton plant. In this way you will put TVA back on the road of efficient and orderly development, from which it was sidetracked a year ago by the connivance of high Federal officials and TVA's utility enemies. This can be done by denying the $6.5 million requested for TVA to build a transmission line to take Dixon-Yates power, and by making this amount available to begin construction of the Fulton plant.

I note that there are to be ground-breaking ceremonies at West Memphis tomorrow—nearly 19 months since administration officials sat down in secret with private utility interests to plot the Dixon-Yates deal.

I might say, too, Mayor Tobey, the very efficient mayor of Memphis, Tenn., told me he had been city engineer and in the city engineering department in Memphis for about 28 or 30 years, and he told me when he put down the foundation for the west pier on the Crump Bridge at Memphis he went down 128 feet to bedrock. I hope when they have this ground-breaking ceremony tomorrow they have a log in the hole they put down to find out how far down they go to foundation there. In my opinion they will go down 125 feet to bring it to the foundation, and then they will have to put pilasters up 25 feet to take it out of the water, or else build a 35-foot dike all around to keep the Mississippi River water out of where they intend to put this new plant.

Actually, Dixon-Yates is breaking ground under false pretenses. But the point I really want to make is that this long delay, plus the prospect of even further delays resulting from court action and Ebasco mismanagement, seems to justify a prediction I made before the Joint Committee on Atomic Energy nearly 7 months ago, in November 1954. At that time I said: "TVA can go to work on the Fulton plant as late as next July and beat the Dixon-Yates crowd all hollow, as it did the Dixon-McAfee crowd at Paducah." And do it cheaper, and on the right side of the river.

What mystifies me, Mr. Chairman, and gentlemen of the committee, if this is an honest deal, if they really want this power for the AEC, why do they not deal directly with the AEC? AEC has the power to coin money, practically. If they want this power for Paducah, Ky., why not set up the plant at Paducah, Ky., instead of going across Tennessee and Kentucky and the Mississippi River and setting up a plant in a swamp for power they need 200 miles away?

Without referring to the books, I think Kentucky has probably 30 or 40 seams of coal. I have stripped personally 3 of those seams of coal, 9, 11, and 12, and did a little work on 14 in Kentucky. If they want capacity out there, Mr. Chairman, they could deliver the coal to a plant in western Kentucky by conveyor belt, if they wanted to, as they proposed to do in Ohio a few years ago. To haul this coal that distance and put it beyond the river is just beyond me.

I am an old construction man. I put 5 years in on the Panama Canal, in 1907 to 1912. I was a contractor for about 16 years afterward, and I know something about construction work.

The TVA has been criticized from time to time for being inefficient. Gentlemen, that is not so. I finished the first drill to drill the first hole at Norris Dam. I have watched them since that time, and in my opinion there has never been an organization any way approaching the efficiency of TVA from a construction standpoint, since the construction of the Panma Canal under the late George Goethals.

These people were able to create an organization, because the panic was on the country, and we did not have two cars in each garage and two chickens in each pot. In fact, we did not have a pot at all 20-odd years ago. They could, therefore, go into the market and pick the best construction talent in the world, and they did just that. Those men, having been there so long, had pride of achievement in what they were doing on the TVA, and they stayed there after private industry had developed in other parts of the country to absorb them, should they desire to leave the TVA.

As for new capacity in addition to Fulton, you gentlemen know better than I how well the TVA financing plan will fare in this Con-

gress. As I said before, we wish to see it pass at this session and without significant change. We are urging this upon Senators and House Members. But even if this committee takes "judicial notice" of the TVA plan, it seems to me it still has a responsibility to recommend adequate appropriations for TVA without reference to any other possibilities. You have already heard the expert testimony of the TVA people themslves; and although I have no way of knowing the details of what they had to say, I am sure there is ample justification for making funds available for the new units at Johnsonville, Gallatin and John Sevier.

Let me remind you of the serious power deficiency rapidly coming into existence in the valley. Two and a half years ago the TVA Chairman predicted that to keep pace with normal load growth (not including atomic energy demands) TVA would have to begin construction of 750,000 kilowatts of capacity each year, beginning in 1953. Because it takes 3 years to build a steam plant, this schedule would have put 750,000 kilowatts on the line each year starting in 1956. Inadequate appropriations in the past 2 years have already brought a deficiency of 1,140,000 kilowatts in this timetable. The budget presently before you, by again providing for no new capacity, would add another 750,000 kilowatts to the deficiency, for a total of 1,890,000 kilowatts assuming no change in the estimate. Congress must act to avert this serious threat of power shortage.

At the same time we urge you not to overlook the nonpower functions of TVA such as the fertilizer program, resource development, flood control and navigation.

Gentlemen, before the TVA came in we had been plowing the hills straight up and down. We knew no better. We had been shooting the corn up in the hillsides, and bringing it down in a jug. Our land was rapidly being washed down into the Mississippi Delta. That has all been changed now. The whole economy of Tennessee has changed. We are a cattle country. We quit trying to raise corn, because we cannot compete with the western farms on that.

Just from the standpoint of recreation alone, there are about 31,000 boats now on the great lakes of Tennessee. We have over 10,000 miles of shoreline. That is more than the combined ocean shoreline of the Pacific and Atlantic Oceans of the United States.

Mr. RABAUT. Off the record.

(Discussion off the record.)

Mr. DEMPSTER. The Tennessee Valley development is a unified development of all resources magnificently designed to solve "the central problem of the use of the earth for the good of man," to use the words of the great Gifford Pinchot, of Pennsylvania, many years ago.

Gentlemen of the committee, TVA is under vicious and sustained attack. It is experiencing the most critical hour of its 22 years existence. The power lobby campaign against TVA is paying off.

Purcell Smith stated in a speech in Nashville, Tenn., several months ago, when someone questioned him about the $498,000 they had spent lobbying around Washington—I do not know whether they fed caviar to everybody, but they claimed they spent that much money—he claimed he was justified in doing that, if he did nothing else but prevent the TVA from getting annual appropriations as requested.

Only 2 years ago we heard the President use the honored forum of a White House press conference to echo the power-lobby cry that TVA

is "creeping socialism." This was the same Dwight D. Eisenhower who told the Tennessee Valley as a candidate in 1952 that his administration would "operate and maintain TVA at maximum efficiency."

Gentlemen, in my country we have a newspaper known as the Knoxville Journal. They were in bankruptcy, receivership, when the TVA came in. The editor thereof was in the same condition, up in another city. Incidentally, he has not paid his milk bill since. He is the man who is trying to mislead you people, saying he speaks for the Tennessee people. I will tell you: He does not.

Mr. RABAUT. What is the name of that paper?

Mr. DEMPSTER. The Knoxville Journal. He being chairman of that committee, naturally I was not invited. I went there as an uninvited guest, and I stood within 50 feet of where the President spoke. He had some difficulty with the microphone. He kept tapping the mike with his glass case. Somebody said I cut the line in two, but I did not cut the line in two. He could not make the mike work, but I could hear him definitely from where I stood. He said words to this effect:

> Regardless of what you hear on the radio or what you see in the newspapers, I am here to tell you here and now it is my intention to operate the TVA at maximum efficiency.

Gentlemen of the committee, that is all we are asking; just the maximum efficiency, if you please.

Since this "creeping socialism" remark we have seen a succession of events that spell nothing less than the reversal of America's traditional policy of resource development for the benefit of the people.

Some time ago the President said:

> If the Federal Government assumes responsibility in perpetuity for providing the TVA area with all the power it can accept, generated by any means whatsoever, it has a similar responsibility with respect to every other region and corner of the United States.

Gentlemen, that is not correct, because many parts of the United States did not object when they spent several hundred million dollars on the New York Harbor and Sandy Hook. There were many other things, including the Panama Canal many years ago, and we did not call that "creeping socialism."

Unfortunately, this statement in my opinion reflects a total unawareness of what conservation is all about. The principle of conservation is that you develop resources where they are, and proper development benefits everybody, not just those in the immediate vicinity.

Speaking without notes, may I state that the Tennessee Valley Authority itself has spent about a billion dollars outside in the acquisition of equipment and other materials not made in Tennessee. In Tennessee we do not have a manufacturing economy or an industrial economy, to a great extent, like in other States, such as Pennsylvania. We buy lots of equipment in Pennsylvania; Milwaukee, Wis.; Chicago; and Ohio. The Marion Steam Shovel Co. and people like that sell to our country. The Caterpillar Manufacturing Co., of Peoria, Ill., sells to this area. All of that comes into our country. That benefits those people out there.

Now, in our country, everybody has some electrical equipment. When the TVA came in we had 3 percent of the farms electrified. Now we have approximately 93 percent. We are so proud of it down there we put the washing machines out on the front porch so that the people coming by can understand the prosperity in the valley.

With what we have bought, plus what the Tennessee Valley Authority has bought, it has been about $8 billion of new business generated by that use in that area, and that has come from the other States where the industrial development is way above what we have or what we may expect to have for years to come.

One Congressman from New England—I believe his name was Cooper—came down there and said that we were robbing New England with this so-called subsidized power. Gentlemen, that is not so. Only one plant came down from New England in the past 25 years to Tennessee, and that came 2 years before the TVA was organized. It is true that some of that New England industry has gone to North Carolina and South Carolina, but, gentlemen, they have their power furnished by private power, like the Carolina Power people and the Duke Power people and others. We are not guilty of that.

I told the gentleman perhaps if they would go in and develop the 3 million kilowatts of power possible in New England from hydropower that perhaps they would not be losing so much of that down to the valley. I hope they do that yet, because that is the way they are going to save the economy they are justified in trying to keep up there now.

By the grace of God the Tennessee Valley, which extends into 7 States, is blessed with a number of natural resources. There is abundant rainfall—about 50 inches a year—with good climate, forests, and abundant coal deposits. Incidentally, many of those are owned by the mountaineer himself. They are the Scotch-Irish who settled that country many years ago, including Davey Crockett and that bunch. Those people have held onto their little holdings in the mountains. There was no way to do anything about it until the market came in from the TVA, on these enormous steam plants. One of them can burn up 3 acres a day of a 5-foot seam.

We have a lot of land on top of those mountains, and it is not very fertile. In fact, we have to fertilize some of it to make bricks, to do any good.

These coal deposits would not be developed were it not for the glorious market like that. They could not compete with the 6 and 8 and up to as high as 12-foot seams in Kentucky. There are 2 or 3 strips they can work with a steam shovel.

These are study, loyal, American people. I mean they are loyal to the United States. During the Civil War the Confederates were never able to maintain their line of communications through east Kentucky. The people there had been shooting one another for free for years, and when they got an opportunity to join the Federal Army and get $15 a month to shoot somebody, that was too good to be true, and they all joined; and then the Confederate Army came in later and took what was left. Tennessee was the battleground of the Civil War. It scarified Tennessee from the mountains to the river. We were scarified as bad as between Atlanta and the sea, when Sherman got through. It took us a long time to get over it. We were not able to get over it until we had help from this Congress.

These are study, aggressive, honest, loyal citizens. Above all, we have a river. That is necessary when you develop power.

This valley never had the benefit of unified management—with all that means in terms of national progress as well as regional—until

the Government fulfilled its responsibility to all citizens by creating the Tennessee Valley Authority.

The power-lobby argument that steam plants for TVA necessarily means "steam plants for everybody" is a phony. The Federal Government itself made TVA steam plants necessary by its huge demands for power.

That is about 50 percent of what is generated in the valley. Yet even if this were not so, at some point the hydro capacity is outrun, and TVA's utility responsibility to its distributors requires steam generation. Fortunately, abundant coal deposits, ample quantities of water and excellent navigation facilities are important elements of the valley's resources, and this makes steam plants a natural, logical consequence in the orderly development of the Tennessee Valley.

In our opinion it is up to you members of Congress to sustain TVA against the massive attacks being made against it and which, quite frankly, show greater promise of success today than at any time in the TVA's history.

I will insert this, Mr. Chairman, and then I will be through. I clipped this from the Knoxville Sentinel the day before yesterday.

Twenty-five years ago the House killed the Norris resolution and then passed a bill drawn by a committee headed by Representative Carroll Reece which provided for leasing Muscle Shoals to private power interests. The Senate previously had passed the Norris resolution which would have kept the Shoals plant in Government hands and provided funds for a dam at Cove Creek, Tenn.

Mr. Hoover was President at the time, and even though the lapse of 25 years should have mellowed him somewhat against his opposition to public power, apparently it has not, from what information I have coming up on the task force, which is to report to you gentlemen at a later time.

(The news release is as follows:)

[From the News-Sentinel files of 1930]

10 AND 25 YEARS AGO

The House killed the Norris resolution and then passed a bill drawn by a committee headed by Representative Carroll Reece which provided for leasing Muscle Shoals to private power interests. The Senate previously had passed the Norris resolution which would have kept the Shoals plant in Government hands and provided funds for a dam at Cove Creek, Tenn. Representative J. Will Taylor, who had reportedly urged adoption of the Norris measure, voted for the Reece bill.

Mr. DEMPSTER. Thank you, gentlemen. I appreciate your courtesy.

Mr. RABAUT. Thank you. Are there any questions?

Mr. FOGARTY. Mr. Mayor, do I understand you correctly to say that the President of the United States, while running for that office in 1952, made the statement that if elected his administration would operate and maintain the TVA at maximum efficiency?

Mr. DEMPSTER. Yes, sir. I stood within 50 feet of him when he said it.

Mr. FOGARTY. I have been reading about that in the paper, but I have never talked to anybody that heard him say it.

Mr. DEMPSTER. I was not an invited guest. He could not make the mike work, but I could hear him. I was within 50 feet. He made that statement.

Some people in Tennessee were a little doubtful, and they went to the Scripps-Howard paper, which was vigorously supporting Mr. Eisenhower. They wired him to amplify it, and he did it, and they had in 2 or 3 days on the front pages of the newspapers in Memphis the story on it.

Mr. FOGARTY. How many days before election?

Mr. DEMPSTER. He spoke there I guess 5 or 6 weeks before the election. I do not have that date with me; I am sorry.

Mr. FOGARTY. That probably made him quite a few votes.

Mr. DEMPSTER. Oh, yes, sir. He would not carry Tennessee now. He carried Tennessee by 2,600 votes. Today he would lose by 150,000.

Mr. FOGARTY. Did he make the statement that TVA was "creeping socialism"?

Mr. DEMPSTER. Yes, sir. He was quoted in the paper, and it was printed all over the United States that it was "creeping socialism." He said that in an unguarded moment, like many of us do when speaking not from notes. I really think he wished he had not said it.

Mr. FOGARTY. Do you think he meant it?

Mr. DEMPSTER. Well, some of the satellites around him might have suggested that to him, but I think if he had time to think it over he would have used another term, frankly.

Mr. FOGARTY. What other term?

Mr. DEMPSTER. He would talk about individual responsibility, free enterprise, and such as that. It would have been a little more euphonious a term than "creeping socialism."

Mr. FOGARTY. What do you think he meant when he said he would operate and maintain the TVA at maximum efficiency?

Mr. DEMPSTER. I believe he intended to say—he knew they had these requests in for additional funds, and I think he meant to convey to us:

Gentlemen, do not be disturbed. You people in Tennessee who have been benefiting, I am going to keep this at maximum efficiency. I am not going up to chop off the Fulton plant and others. I am going to run at full capacity.

I think he really meant to convey that to us, as a candidate.

Mr. PHILLIPS. Do we not have a habit, as Mr. Fogarty has just brought out, of interpreting remarks to suit ourselves? When somebody said that he was going to operate and maintain the TVA at maximum efficiency, I would presume he meant just that and not anything that somebody else might read into it. The House, the Congress has consistently turned down for several years all requests for additional steam plants. The TVA is being maintained at its maximum present efficiency.

The requests now are to build additional steam plants, and particularly to build them outside the area, which was conceived to be the TVA area in the original act. So I do not find anything inconsistent with a statement that the TVA is being maintained at its maximum efficiency.

So far as "creeping socialism" is concerned, I did not hear the speech. I would suppose that if the TVA crept over toward the river, on the basis of the TVA attorney's implication the other day that you could carry those transmission lines just as far as you wanted and build as many steam plants along them as you wanted, provided you had one end tied to the hydroelectric grid, it seems to me that "creeping socialism" would not have been too far away on that basis; would it?

I mean to say, TVA as of the present is one thing; TVA as of some of the suggestions is something else.

Mr. RABAUT. Peculiar things are done in most campaigns. They have the heat of the campaign and the rush of the moment. The information I have is that some of these statements were really headlines in the papers the day before election. If so, we have to charge it up to campaign ideas; but you know, in the rush of campaigning a lot of things are written down for a candidate. Sometimes he uses them and sometimes he does not. Sometimes you regret them. Everybody is in the same boat.

Mr. PHILLIPS. Mr. Chairman, you are very right. I have never been to a political meeting yet but what I made three speeches; one I intended to make when I went, one I actually made when I got there, and one I read in the newspapers the next morning.

Mr. DEMPSTER. At the same time, Mr. Chairman, may I suggest that I am frequently misquoted, as I am frequently misquoted in the Knoxville Journal, and I demand an explanation the next day. I have never heard any word from the White House that they have been misquoted on this "creeping socialism."

Mr. RABAUT. We have a quorum call, but we will come right back.

Mr. DEMPSTER. May I have about a minute after you come back, please?

Mr. RABAUT. Certainly. Nobody is cutting you off.

Mr. DEMPSTER. I want to explain that Memphis deal.

(A short recess was taken.)

Mr. RABAUT. The committee will be in order, please. We will continue with the testimony of Mr. Dempster.

Mr. DEMPSTER. Thank you, Mr. Chairman. I was trying to impress upon you that in Memphis, when the question was brought up down there, and when they came in to see whether we wanted some development like this, they took a vote on the question of whether we should buy the private utilities, and Memphis voted to buy the utilities by a vote of 17 to 1, more than any other part of the State, and it has always been considered as a part of TVA.

Mr. PHILLIPS. When was that, Mr. Dempster?

Mr. DEMPSTER. In 1933 or 1934. The vote was 17 to 1. Knoxville voted very strongly for it; and, in fact, practically all of the cities did, and when the last presidential election was up, this recommendation for the plant was a TVA recommendation back there when—they knew what they had to have the year before.

And, gentlemen, one of the greatest scientists in America, and he did not want me to use his name in testifying before you, but he came to this country, a German Jew, not much taller than I am, and he told me that he believed—and he had no occasion to be promoting the TVA—but he told me that, in his opinion, had it not been for the

Tennessee Valley Authority, with its development of power, that the atomic bomb would have been delayed from 2 to 4 years and by that time it would have been known by the other people; they would have had it first. He was run out of Germany and he knew something about the background for it.

Gentlemen, this is the same thing. And I wish some members of the committee could come down there, like some other committees have, and be convinced of what this is. This is not a local thing, but this is something that helps the whole of the United States.

And any time when we are talking about defense—I was up here last week and testified on civil defense—and that will apply more quickly to what we are doing down there. This Nation has that part of the country simply covered with jets. They spend $50 million, perhaps, in the Knoxville area developing their own plants, and they cover the whole southern part of the country. They keep a blanket of jets over Oak Ridge all of the time. That is perhaps the number one target in America. The citizens down there put up an appropriation each year, and Val Peterson complimented us in saying that we were further ahead on our defense than any other city in the South. And he took our director and made him the regional director over all of the South, including a portion of the Gulf of Mexico and Puerto Rico.

We realize we are a vital area down there, and what paralyzes us is this thing that would be promoted by the power people. They are doing this; they see a good big development down there, when years before you could not get anything; you had to have an act of Congress to run a line out to a man on a farm.

Well, the TVA came in, and they just reversed that policy; they developed a great big market, and they have given us a yardstick—and that is what they gave, is the yardstick.

Mr. RABAUT. I agree with you.

Mr. DEMPSTER. And I am sure you realize that what they pay in lieu of taxes is many times more what the private people were paying as taxes before, because, as I say, they kept 2 or 3 sets of books; like the speeches the Congressman was talking about, they had 3 of them. They kept 3 sets of books, 1 set for the taxes when the taxgather came along and when you came along as a prospective investor, they have got another, and then they keep a third there, just sort of reserve like. Like this outfit down in Mississippi that the treasurer testified to as having been done there for some 20 years.

Now, they have an efficient organization; they have an efficient manager. Frankly, I do not see how the man can afford to stay there. I have got a little company and I pay a good many of my top brass much more money than the top man in TVA is getting. It must be pride of achievement. They have done something for the country and they have rehabilitated a part of the country that absolutely was scarred as bad as Korea.

My first partner was an old Confederate soldier who was with Lee when he surrendered. You know they said they were going to give everybody a horse; and he said the horses ran out before they got down to the sergeants. The top brass got them and when they got down to him, they gave him a fast walking stick and he walked back into Tennessee. And he said there was not a live animal there after

he got to Bristol, all the way down, because that was the battleground all the way around the Cumberland Mountains, the Cumberland Gap, all the way to Memphis.

Gentlemen, that country was torn down to the ground. It was neglected for 60-odd years. Now, during that time we have seen developments take place all around these port cities; we have seen them give assistance to every section of the land in the West, and to the railroads in order to build the railroads. I have no particular objection, but the Tennessee Valley Authority has paid in about $501 million in income taxes, compared with the time when they said we were people who were so poor that we were living on the banks trying to make a living like the aborigines did.

We have developed that into an economy that is valuable to the entire country. That is the reason why we are, frankly, disturbed as to why we should have this battle to this extent.

Now, after we have had this battle, and after you have made these appropriations, they say, let us get the TVA, refinance this deal. The three members said that it would and General Vogel has said something to the same effect, after having information from down in the General Accounting Office. This can be financed down there. This is a bankable proposition. I have been advised by some of the biggest banks in New York that this is a bankable proposition, if Congress will pass some legislation that will let us do it, and they can take it off of your hands. And they say, well, there is so much money, so many millions of dollars owed, and we will pay that out at the end of 40 years and get rid of us.

Mr. PHILLIPS. Mr. Dempster, in reference to that refinancing question, it was not clear to me in the testimony the other day. Is it the intention to issue revenue bonds to replace the entire present balance, or is it just a proposal to issue revenue bonds for expansion?

Mr. DEMPSTER. I think they would be marketable, the bonds would be, to take over the whole thing. These people, I think, would like to move in first and take care of the expansion, give a kind of a slow note, like we do at the bank once in a while, but I think the whole thing can be, from the standpoint of power, could be——

Mr. PHILLIPS (interposing). I believe you said that the Worthington Co. went down there somewhere, or was that one of the other gentlemen?

Mr. DEMPSTER. No. The only one that came down there was from New England, I believe, at Cumberland, Tenn.

Mr. PHILLIPS. I believe it was the other witness, the young attorney. I was wondering where they had settled; does anyone know?

Mr. COOPER. At Decatur, Ala.

Mr. PHILLIPS. Is that in the Tennessee Valley area?

Mr. DEMPSTER. Yes. You see, the Tennessee River crosses the State twice, and laps down into northern Alabama in doing so.

Mr. RABAUT. Thank you very much.

Mr. DEMPSTER. Thank you, Mr. Chairman and gentlemen of the committee.

STATEMENT OF FLOYD JONES

Mr. COOPER. Mr. Chairman, I am especially gratified to have the privilege of presenting as the next witness Mr. Floyd Jones, manager of the Gibson County Electric Membership Corp., of Trenton, Tenn.,

which is in the district I have the honor to represent. There is a bust of David Crockett in the courthouse yard at Trenton, Tenn., so we have had some publicity along that line recently, and I am very happy to present Mr. Jones, who is rendering an outstanding service in our section of Tennessee in the great work he is doing.

Mr. RABAUT. Mr. Jones, the committee will be very pleased to hear you at this time.

Mr. JONES. Mr. Chairman, and gentlemen of the committee, my name is Floyd Jones. I am manager of the Gibson County Electric Membership Corp., of Trenton, Tenn. I am president of the Tennessee Rural Electric Cooperative Association, an organization of rural electric cooperatives to which 20 of the 22 cooperatives in the State belong. I would like to present for your consideration basic information with regard to the growth in use of electric power by the members of the electric cooperatives of Tennessee and its effect on our people.

The maximum demand for power from these cooperatives during the year 1954 was 393,210 kilowatts. This was an average increase of individual demands of 11.77 percent over the previous year. The kilowatt-hour purchases of these 22 cooperatives increased an average of 13.86 percent over the previous year.

In March of 1955, these cooperatives were serving 252,251 members or consumers. Service to 80 or 85 percent of these members is for farms or homes. These cooperatives are, therefore, responsible for electric service to approximately 1 million people.

The cooperatives have invested more than $90 million in the electric distribution facilities for service to their members. Initially, practically all of the capital funds of these cooperatives was borrowed from agencies of the Federal Government, particularly the Rural Electrification Administration. Our officers signed notes for these funds in good faith that electric use and operating costs, including the wholesale cost of power, would be such that the notes could be repaid. These distribution facilities are being reconstructed for an ever-increasing load, which, as indicated above, is growing from 12 to 14 percent per year. The entire economy of the farm and rural communities is now built around adequate electric service being available.

These cooperatives all have long-term contracts with the Tennessee Valley Authority as the sole supplier of electric power. If this increased power is not made available, then farm, home and community development comes to an abrupt halt. Tremendous strides have been made in cutting the cost of farm production in our State in the last 15 years. A substantial portion of this cost cutting progress can be attributed to the availability of electric power to the farms. Approximately 95 percent of all the farms in Tennessee now have electric service. No greater deterrent to their progress can be imposed than to put a ceiling on their electric power use.

In the early 1930's, many of our rural people had only poverty and hopelessness to look forward to. Our farms could not keep topsoil nor keep top people. With the coming of electricity, soil conservation, better rural roads and improved educational facilities, the countryside has been literally transformed. But of supreme importance is the fact that the lives of the people themselves have been transformed. How has this transformation come about? I would mention only two of the many results of electricity in the home and on the farm, these are an automatic water system and mechanical refrig-

eration. These two have been immensely important to health and therefore, the economic condition of rural people.

Our people have become infused with new hopes and instilled with new visions. The community leaders who organized and nurtured these electric cooperatives, worked with fervor and zeal for the welfare of their children and neighbors. They felt and believed that they were helping to bring life and to bring it more abundantly. Their labors have borne much fruit but that fruit must not be allowed to die on the vine.

We are not asking for largess from the Federal Treasury. We expect the Tennessee Valley Authority to return to the Treasury the money advanced and a reasonable rate of interest to be earned on that money.

Speaking of the cooperatives in Tennessee only, we will, therefore, need the output of new generating capacity in the amount of 50,000 kilowatts per year. We look to the Tennessee Valley Authority for this power to be available. I would like to ask the committee, therefore, that this urgent need from the rural areas in Tennessee be given full consideration. The health, welfare, and economic well-being of virtually all of our rural population depend upon it. We have the responsibility of providing electric service for these people, and we ask the urgent consideration of this committee and the Congress in our efforts to carry out this responsibility.

I would further point out that we have no financial motives in making this request. The cooperatives are all nonprofit organizations and serve their members at cost. We trust that you appreciate our endeavors in this regard.

I would further mention, Mr. Chairman and gentlemen of the committee, that of the 50,000 kilowatts of new capacity we need each year our members must spend many hundreds of thousands of dollars to buy new equipment to use the capacity that is made available to their homes and farms. This money is all spent outside the Tennessee Valley so that, in so doing, the farmers and homemakers are not only helping themselves but they are helping the economy of the remainder of the Nation.

Mr. RABAUT. Thank you very much.

Mr. JONES. Thank you, Mr. Chairman and gentlemen.

Mr. EVINS. I present next Mr. Alex Radin, general manager of the American Public Power Association of Washington, who is well known to the members of this committee.

Mr. RABAUT. We will be very glad to hear you at this time, Mr. Radin.

STATEMENT OF ALEX RADIN

Mr. RADIN. Thank you.

My name is Alex Radin. I am general manager of the American Public Power Association, a national trade organization which represents more than 800 local publicly owned electric utilities in 40 States and Puerto Rico. Most of the member systems of our association are municipally owned electric utilities, but our membership also includes public utility districts, State-owned electric systems, and rural electric cooperatives. No Federal power system is a member of our association.

The municipal distributors of TVA power which are members of our association purchased 7,638,473,000 kilowatt-hours from TVA in

the 1954 fiscal year. These wholesale purchases represented 78.8 percent of TVA's total sales to municipal utilities during that fiscal year. Being wholly dependent upon TVA, by contract, as their power supplier, our member utilities in the TVA area understandably look with a great deal of concern upon TVA's ability to meet the future needs of its wholesale customers.

However, beyond the more immediate problems facing our member systems in the Tennessee Valley, our association also has an interest in this matter that stems from our deep concern with the fundamental responsibility of any public utility—that of providing an adequate supply to meet the needs of the future. It is our belief that the proposed budget for TVA for the 1956 fiscal year fails to meet this basic responsibility, and therefore would be injurious not only to TVA but to our national interest.

In view of the testimony being given immediately preceding mine by representatives from the TVA area, I will attempt not to be repetitious as to the plight which would face TVA if the proposed budget is carried through as projected. I would merely like to point out that the President's budget message (see page 211) shows that in 1958 TVA will have an assured capacity of 7,033,000 kilowatts to meet loads other than AEC, while, at the same time, the agency will have a load of 7,490,000 kilowatts. The President's budget message therefore plainly indicates that TVA will have a deficiency of 457,000 kilowatts, or 6 percent, in 1958. In the event that power from the so-called Dixon-Yates plant at West Memphis is not fed into the TVA system, TVA's deficiency would be in the order of 1 million kilowatts. This, too, assumes that no new defense loads will be placed upon the TVA system—a situation which is difficult to understand in view of the outstanding success which TVA has achieved thus far in supplying a large share of the Nation's defense requirements.

The implications for the people of the Tennessee Valley of a possible shortage of this magnitude can readily be seen. It is a situation which undoubtedly has sent chills down the spine of every operator of a power system in the TVA area, and it is a situation which also is looked upon with great alarm by the household, commercial, and industrial users of power in the area.

As dangerous as this situation is for the Tennessee Valley, I believe it presents an equal—if not greater—danger for the Nation as a whole. The fact that there is Government regulation of the electric industry both on the Federal and local levels clearly indicates that the manner of conduct of this industry is of public interest. Surely no community would continue to franchise an electric company which failed utterly to meet the needs of the people served. And I am sure that appropriate Federal commissions, too, would take corrective action if a public utility under its jurisdiction failed to meet the requirements of its customers.

Yet, the Federal Government, in operating the TVA power system, is plainly indicating, in its presently proposed budget, that it does not plan to meet adequately its responsibilities to its consumers. This is a shocking situation which, in my opinion, would have serious consequences, for if the Federal Government fails to meet its responsibilities in an area where it has clearly undertaken a public utility responsibility, how can privately owned electric utilities be impressed with the solemn obligations they owe to the public as public utilities?

Surely this defaulting by the Federal Government will make much more difficult the problem of other governmental agencies, both on the Federal and local levels, in requiring a public utility to measure up to its obligations to its consumers.

Where the Federal Government has undertaken the responsibility for power supply for an area, it should at the very least be expected to operate its system at the same level of efficiency as a privately owned electric utility. In such a case, TVA would have a reserve of 15 to 20 percent of its generating capacity, rather than a deficiency of at least 6 percent.

There is one further aspect of this deficiency of power by this important Government agency that bears examination. On April 15, 1955, the Office of Defense Mobilization, which is part of the Executive Office of the President, announced that it was revising its goal for class 1 electric utilities to 150 million kilowatts by the end of 1958, an increase of about 46 million kilowatts—or almost 50 percent—over the capacity scheduled to have been in place on December 31, 1954.

At the same time, Office of Defense Mobilization announced that it would begin processing applications for rapid tax write-off certificates for electric utilities which have been pending since the former goal was suspended, and that new applications would be accepted immediately. These certificates were described by the House Committee on Expenditures in the Executive Department in a report issued May 28, 1951, as the "biggest bonanza that ever came down the Government pike."

Surely, if electric power production is so essential to our national defense that it warrants the Government providing what have been referred to as subsidies to the electric companies, then the Government is equally justified in making an investment in its own power system—an investment which will be amortized in full. This would particularly seem to be the case in the light of TVA's magnificent contributions to national defense during World War II and the post-war period.

Furthermore, it would seem that in view of the importance of these goals to the national defense, the Government, in the operation of its own electric system, should set an example for other utilities of the Nation to follow. For the Federal Government to fail to meet even minimum standards of power supply would appear to bring into question the Government's sincerity in setting such high standards for other utilities of the Nation.

It has been said that the adoption by the Congress of a new financing plan for TVA would relieve the critical power situation faced by that agency. In this connection, I might point out that our association last month went on record in support of such a financing plan, as originally proposed by TVA. While I would not be so presumptive as to attempt to predict what action the Congress will take on this plan during the current session, I do believe it should be recognized that this plan would bring about some fundamental changes in the TVA act. Moreover, it is a matter on which many people have many conflicting ideas which they would wish to express to the Congress in appropriate hearings. In fact, correspondence released last week indicates that there are differences of opinion even among the TVA directors as to the wisdom or feasibility of some of the changes in this plan proposed by the Bureau of the Budget. For this reason, it

would certainly appear to be dangerous, from the standpoint of the TVA area and of the Nation, to assume that TVA's future power needs could be met adequately at this time by relying upon the adoption of a new financing plan by the current session of the Congress.

We recognize, of course, that the President's budget message also states that TVA's power supply could be augmented by purchases of power from outside sources. In this regard, it is interesting to note that TVA's annual report for the fiscal year 1954 showed that the agency purchased 580,913,000 kilowatt-hours at a cost of $2,521,607—or 4.34 mills per kilowatt-hour. The same report indicates that the average production costs for power from all of TVA's steam plants (including three old ones) was 2.98 mills per kilowatt-hour. Aside from all the other implications involved in the policy of purchasing power from outside sources, it would be difficult to believe that the Congress would advocate the Government purchasing power for its own system when it could generate power itself at a cost of at least 31 percent less per kilowatt-hour.

TVA is looked upon throughout the world as one of the proudest achievements of the United States. Exery year thousands of visitors from every part of the world come to TVA to study the manner in which it was created and is being operated today. To permit TVA to operate at standards not only less than those of maximum efficiency, but at standards which would greatly impair the efficiency of this agency, would be damaging, in my opinion, to our national interests.

It has been reported in the press that the TVA directors originally requested almost 1 million kilowatts of new capacity for the 1956 budget. In the interests not only of TVA but of the Nation, we urge your committee to make adequate provision for such capacity.

For your further information, I am attaching two resolutions on the subject of TVA which were adopted on May 5, 1955, at the annual convention of our association at Jacksonville, Fla.

I would like to ask the permission of the committee to insert these resolutions as part of my testimony.

Mr. RABAUT. Without objection, they will be included in the record.

(The resolutions referred to follow:)

RESOLUTIONS ADOPTED MAY 5, 1955, AT AMERICAN PUBLIC POWER ASSOCIATION ANNUAL CONVENTION, JACKSONVILLE, FLA.

RESOLUTION NO. 1— TVA SELF-FINANCING PLANS

Whereas Congress, through the establishment of the Tennessee Valley Authority, has caused the Government to be the source of power supply for the Tennessee Valley service area, including the huge needs of the Government itself for national defense power needs in this area, with resulting large benefits in cost to the Government for such national defense power needs, and has made annual appropriations for the purpose of providing such power supply; and

Whereas in addition to these huge savings in the Government's power costs for national defense needs, a return to the Government averaging 4 percent has been realized upon such appropriations, which are being repaid by TVA to the Government upon a schedule imposed by the Congress; and

Whereas the TVA has submitted to the Bureau of the Budget a proposed plan whereby TVA can issue its own revenue bonds (not to be a direct Government obligation, but only one of TVA itself) which can provide funds for the future power needs of the Tennessee Valley service area, now increasing at the rate of 750,000 kilowatts per year, all of which power needs Congress may not wish to provide for by appropriated funds; and

Whereas such proposed self-financing plans for TVA, as submitted by them to the Bureau of the Budget, have had widespread approval throughout the Ten-

nessee Valley service area, and particularly by the executive board of the Tennessee Valley Public Power Association, a group 96 percent representative of the 150 municipalities and cooperatives who distribute TVA power in the area: Now, therefore, be it

Resolved, (1) That the American Public Power Association urges the Bureau of the Budget to promptly approve, as submitted, these self-financing plans of the TVA for its funds needed for future power supply; and

(2) That the American Public Power Association urges speedy enactment by the Congress of such plans, as submitted, into law.

RESOLUTION NO. 2—DIXON-YATES CONTRACT

Whereas the so-called Dixon-Yates-AEC power contract was privately negotiated, without competitive bidding, and imposes upon all the taxpayers of the Nation a power cost to AEC of over $100 million more than would have been required had an equivalent amount of power been obtained from a power plant built by TVA; and

Whereas under this contract there is provided a huge subsidy for two giant utility holding companies who have as their purpose the encirclement, curtailment and eventual destruction of TVA; and

Whereas such eventual destruction of TVA would remove its great value as a national asset and yardstick in holding power rates down, the results of which have been the saving of untold millions of dollars to ratepayers all over the Nation, and particularly to the whole Nation for the Government's national defense power costs; and

Whereas the Dixon-Yates combine arrogantly proposes to use as engineers and contractors upon the project a firm whose engineering and construction methods have been publicly criticized as being wasteful and uneconomic by officials of our Government upon other power projects, for which they have been engineers and contractors, thus unnecessarily adding millions of dollars to the Government's power costs on these projects; and

Whereas the dispute over the Dixon-Yates-AEC contract has plunged the Atomic Energy Commission into the middle of a political controversy, entirely foreign to the purposes for which it was created, thus causing widespread loss of public confidence in its ability to carry out its designated program: Now, therefore, be it

Resolved, (1) That the American Public Power Association urges the Atomic Energy Commission to cancel the Dixon-Yates power contract;

(2) That the American Public Power Association urges the Congress, after cancellation of the contract, to make possible the construction of a power plant by TVA to furnish an amount of power equivalent to that proposed to be furnished by Dixon-Yates under this contract; and

(3) That the American Public Power Association urges the Congress, in the event the AEC does not do this, to deny appropriations to AEC, and also to TVA, for the purpose of completing the contract.

Mr. PHILLIPS. I noted on the margin, on page 2, Mr. Radin, at the top of the page, in the third line, you give a figure of 7,490,000 kilowatts.

Mr. RADIN. Yes.

Mr. PHILLIPS. As the estimate made by the Tennessee Valley Authority of the probable demand upon them. In what year was that, 1958?

Mr. RADIN. In 1958.

Mr. PHILLIPS. I think when the printed hearing of the testimony of the TVA representatives is available, you should read it. It will show their estimates for the past 5 years have been consistently overestimated as to what the demand would be, almost up to the month before the one in which their estimate was given, and consequently I would say on the basis of the past history, that there will be no deficit. If they have an assured capacity of 7,033,000 kilowatts, with the customary possibility of running slightly in excess of that, even not counting that, there will be no deficit whatever on the basis of past estimates.

Mr. RADIN. Mr. Phillips, I took that figure from the President's budget message. It is my understanding—but I am subject to correction, that some of their loads have been less than estimated because they have cut off some of their interruptible power——

Mr. PHILLIPS. No, I am not taking that into consideration.

Mr. RADIN. I see.

Mr. PHILLIPS. That is a very different subject, on which they are equally in error, because TVA has in its testimony indicated that it has been compelled to deny customers that wanted the power, and the evidence is very clear that they have not done so, except in interruptible loads.

Mr. RADIN. I will be interested to study the record.

(NOTE.—The following information was supplied subsequently by Mr. Radin:)

It has been a matter of general knowledge that the power-supply situation in the TVA area has been tight for several years, including this past winter. It is also known that this tight power-supply situation has been a reflection of two important facts: (1) That TVA generating capacity has not been allowed to grow as rapidly as TVA recommended, and (2) that power requirements, particularly at the atomic-energy plants, have grown even faster than TVA forecast when it recommended the capacity additions. If these were not the facts, it is obvious that TVA would have had the capacity surplus it has sought to provide instead of the capacity deficiencies which have actually developed.

For two specific figures I have looked up TVA's estimates of the load for this past winter—an estimate given to the Appropriations Committee 3 years ago when the necessary capacity should have been started. I find that TVA estimated "power demands on the TVA system of 6,400,000 kilowatts by the end of 1954." The reference is page 1336, House hearings, independent offices appropriations for 1953. I find by checking with TVA that before the end of 1954 power requirements had grown to 7,658,000 kilowatts, of which it was possible to supply 6,325,000 kilowatts with the available power. The difference, according to TVA, represented 295,000 kilowatts of industrial loads that had to be curtailed and 1,039,000 kilowatts of the growing loads at the atomic-energy plant that could not be supplied until more of the generating capacity under construction at the Shawnee and Kingston plants could be completed.

Additional information showing that, in summary, actual demands have exceeded TVA's short-range estimates at least as often as they have fallen short of such estimates; actual demands have consistently exceeded TVA's long-range estimates presented to the Congress in support of new generating capacity, are contained on pages 94 and 95 of the hearings by a subcommittee of the Senate Appropriations Committee on the second independent offices appropriation for 1954 (H. R. 5690).

Mr. PHILLIPS. I think you should because I do not think there is going to be any deficit even on the basis of their own figures.

Then you assume, in your statement in the next to the last paragraph—or the last complete paragraph—you assume that the only place to get the power is to build it into the system.

Surely no community would continue to franchise an electric company in America—

and I am quoting you—

which failed to meet the needs of the people it served.

Why do you have the assumption that you cannot buy power from the surrounding companies for emergency use when TVA itself has been doing it for years?

Mr. RADIN. The principal deficiency in that is the cost is so much greater than it would be if TVA were to generate power on its own, and also there is the other basic question of whether the TVA, as an

integrated power system, should be dependent upon an outside source of supply.

Mr. PHILLIPS. How many members do you have in your organization?

Mr. RADIN. We have about 800 in the organization.

Mr. PHILLIPS. How many of them do you suppose buy power from utilities other than the power they create themselves, either public or private?

Mr. RADIN. I do not have the figures on that; I will be glad to supply them.

Mr. PHILLIPS. I would be interested to know.

(The information requested follows:)

Apparently 46 percent of the members of the American Public Power Association are dependent upon purchased power.

Mr. PHILLIPS. Now, with reference to this matter of price of power, at the top of page 5 you gave the purchase price by TVA as 4.34 mills, and their production cost as 2.98 mills.

I question whether that is a comparable figure. Does the 2.98 mills include fixed charges, exactly the same overhead charges as would be charged by the seller of the 4.34-mill power?

Mr. RADIN. I do not know that they would be exactly comparable; I think they would be roughly comparable.

Mr. PHILLIPS. Well, you would have to include all of the production costs; you would have to include interest; you would have to include taxes; you would have to include all of the comparable figures.

Mr. RADIN. Those figures there were taken from the TVA's annual report. I do not think the report shows specifically what charges are included, but I think with a little further research we could ascertain exactly what costs are included.

Mr. PHILLIPS. I think the study would discover that the figures are closer than your statement would show.

As a matter of curiosity to me, down here in your statement at the bottom of page 3, about tax certificates—and you are getting into a field which I do know something about—first of all, as a matter of curiosity, you have called this the House Committee on Expenditures in Executive Departments; you give the date of it 1951. When did we change the name of that? It is now called the Committee on Government Operations. I thought it was changed in the Reorganization Act of 1946. I mean, is your date right with reference to the report made?

Mr. RADIN. I am sure the date is right. That could be a subcommittee.

Mr. PHILLIPS. Well, you imply, first of all—at least, this implication could be read into it—that when the certificates, these tax-writeoff certificates, as they call them, are given, that it implies that it could be over the entire cost of the construction of the utility. It is only over that part of the facility, as you know, that is in excess of the needs of the utility. If the public utility were asked to go into the production of power and 25 percent of that increase would be more than they could foresee, then this rapid writeoff is only on that 25 percent. It is not on the entire amount.

And, furthermore, a great many of them do not use it, because there is a very real question, in the accounting field, whether it has the value, the tax writeoff, which it is supposed to have, and as to

whether it would not be better to take the longer-period writeoff, rather than the rapid writeoff. The only intent of it was to produce a reserve over and above anything which the utilities themselves might use.

I thought you had made a fairly broad statement there which was not quite in accord with the accounting facts.

Mr. RADIN. It is my understanding that the privately owned electric utilities have obtained those certificates to the extent of about $2 billion.

Mr. PHILLIPS. I never heard a figure given.

Mr. RADIN. I think that is correct.

Mr. PHILLIPS. As I say, it would be only on that part which, in a sense, we had asked them to make, over and above what their needs would be; and I think that would apply to all the users. We have given certificates to people who have built an additional factory facility for airplane production and so forth.

Mr. RADIN. They are available to industry, other than the electric industry, but the electric industry has used them, I understand, to the extent of about $2 billion.

Mr. PHILLIPS. There is a very real question in accounting as to whether it is to the advantage of the company to use them or not. I do not think it has ever been fully settled.

Mr. RADIN. My recollection is that the Federal Power Commission has ruled on that and I would like to refer to the facts which I do not have before me, but I think they refer to these certificates as having the effect of interest-free loans, and they calculated the value of it on that basis.

Mr. PHILLIPS. That could be. You say you have 800 members. Do you know if any of your members outside this Tennessee Valley area buy power from a company which controls the price at which the final distributor sells it to the user, the consumer? Do you know of anybody?

Mr. RADIN. I would have to check to ascertain the extent to which Bonneville and some of the other Federal agencies do that. I do not believe they exercise as much jurisdiction in that regard as TVA, but that is possible.

That is a part of the TVA Act under which that was set up.

Mr. PHILLIPS. I understand, but that was not mandatory; it was a permissive item. Bonneville did it and then discontinued it, if I am correctly informed. I think to date TVA is the only one that exercises this complete monopoly of saying to a purchaser that he may not buy from anybody else and that TVA will control the price at which it is sold the retailer. During the depression years, a great many communities like my own, which buys power and retails it to the community, would have been in a very difficult situation had we had a restriction upon us like that. I do not see how we could have survived.

Mr. RADIN. My impression from the distributors in the TVA area is that they look with favor on this, because it insures that the benefits of this low-cost power is passed on to the ultimate consumer.

Mr. PHILLIPS. The suggestion is made that that means simply they get somebody else to pay their taxes for them. The real point in my mind is that I should think the people themselves would want to, in their community system. I do not see why it means such an increase in cost of power; generally it means a mill; a couple of mills, or a fraction

of a mill for schools or recreation or even for the operation of the community itself, the community government. That sticks in my mind every year when it comes up, as to why the people of Tennessee continue a contract of that kind. You cannot answer that?

Mr. RADIN. No, but I think the distributors could answer it.

Mr. RABAUT. Before you leave that, when we talk about monopoly, usually we talk about something where the price is maintained for the protection of industry. To use the word monopoly in this sense here is not quite the same application in which the term is ordinarily used because it is used in the maintenance of price, where it is, the maintenance of price, for the benefit of the ultimate consumer in the area; that is what you have in mind?

Mr. RADIN. Yes.

Mr. RABAUT. That is a different appraisal than is usually put upon the word "monopoly."

Mr. RADIN. That is correct.

Mr. RABAUT. Do you have any knowledge of what the profits have been for private industry, private companies, in the power business adjacent to the TVA?

Mr. RADIN. My information is that the return has been equal if not better than the national average. The most recent complete information that I have seen on that is contained in the report of the President's Water Resources Policy Commission which contains a table showing the returns on investment of private companies in the area adjacent to the TVA, and that return shows it is about equal to, or better than, the national average.

Mr. RABAUT. I asked that question because that is the information the committee has.

Now, inasmuch as that return in the vicinity, so close to the TVA operation, is so good for the power companies, that are in that area, I think it speaks well for the TVA.

Mr. RADIN. I agree with you. I think it forces them to a better operating policy.

Mr. RABAUT. I feel, further, that the TVA, or any activity by the very nature of the world in which we live, must be centralized someplace, and TVA is in this particular area; but while there are benefits that accrue to the area, TVA by its very existence, has assisted many, many other areas in the United States. As one witness testified, there were $6 million worth of outboard motors used in the TVA area.

It seems to me that somebody could make known some other products that are used to a marked degree because of the changes that have come about as a result of the TVA activities. Of course, there are the huge power resources that have been augmented, necessitating the transmission of the power, including everything from wires and generators, turbines, and what-have-you. There is new industry that has been attracted to the area, not necessarily to the detriment of another area, but maybe for the greater purpose of serving the United States. Nobody knows what the purpose is for; maybe they are passing on some of their profits to the rest of the people.

There is the income that comes from the area in the return of an income tax.

Then there is the increment that is added to the land value. I know for certain that if you are doing all this business down there, then you are doing my area a service because my area produces automobiles.

I think that would be true of other areas that produce refrigerators and electric appliances and so forth.

I cannot have this feeling of sectionalism against the area any more than I can have a feeling of sectionalism against the St. Lawrence seaway or the Mississippi River.

For years I was acting chairman of the subcommittee that handled appropriations for the Mississippi River. We poured $60 million a year into it to keep it within its banks. Certainly that did not mean anything to me up in Detroit, Mich., and still in a way it did mean something to me in Detroit because many of our automobiles were taken down the Mississippi River on barges. Other items were transported. We have to get away from this sectionalism in the United States. This is a big country. There may be differences of opinion on the committee here. There should not be any differences on the part of the witnesses here. Let us be big. Let us get American. Let us get a viewpoint for this whole Nation, every part of it from coast to coast and from Canada to the gulf. We can do a lot for each other.

It is natural that we should have differences. This is a great place to iron out differences. It is a place where we have to give and take. Long ago I had to learn to give here, and sometimes I had to take. I do not know how it is going to be this year.

Mr. PHILLIPS. Your comment on the profits made by the private utilities on the periphery of the TVA area is rather interesting to me. Profits are usually based on the income and the industrial uses of power in an area. If the utilities outside the TVA area are doing that well, it would imply that the area outside of TVA is doing better industrially than the TVA area itself.

Mr. RABAUT. It probably is, but it is certainly no threat to them.

Mr. PHILLIPS. No threat at all. That is the point that I am trying to make. If they were losing because of the existence of TVA, I would not make the point, but they are not. So long as TVA stays inside its legal area I do not think there is any objection.

Mr. RABAUT. I want to say one other thing. Here we have a certain industry or activity that the TVA has built up. To have firm power all the time we need additional steam power. Why should we have it reduced to peaking power at times, or dump power at other times? I would like to know of any individual firm that would treat itself in that manner. I do not think that it would exist any place. They would want firm power if they could have it, because firm power on the line delivers the power needed and needed at any given time. Not having this power augmented—and not augmented by outside power—is the one step in this whole thing that I cannot understand. I cannot understand the logic of it. It has never been logically presented to me.

Mr. PHILLIPS. You said that monopolies were usually created to protect industries.

Mr. RABAUT. To protect themselves.

Mr. PHILLIPS. I wonder if they can also protect bureaucracy?

Mr. RABAUT. That is far-fetched, I think. At this particular time that is not the argument. Why use the term when we are talking about protecting the individuals down at the bottom of the ladder? We heard it testified that this was a very poor area.

(Discussion off the record.)

Mr. EVINS. The next witness that has been requested to be heard by the committee is Mr. Jack Wildman, representing the Association of Test Demonstration Farm Families from Iuka, Miss.

STATEMENT OF JACK WILDMAN

Mr. WILDMAN. Gentlemen, I am appearing here in behalf of the test demonstration organization, farm families. I have heard much concerning the TVA's power and electric power throughout the valley and other areas, but my objective is a little different. We want to put before this honorable committee the need for continuing and increasing, if possible, appropriations for the chemical end of TVA. We, as the test demonstration farm families throughout the valley States, think we have done a good job in showing to the Nation, not just the valley, what can be done with materials that can be manufactured by TVA.

In World War II TVA began telling these plants to prepare war material. There has been a place found for them in the service of our country in preparing materials that can be used by a farmer, by agricultural departments, and they have accomplished as much, we think.

We think that through the test demonstration organizations, and the TVA's materials that have been supplied to us through the land-grant colleges and the extension services, we have been able to develop the income in the South, or in the valley States especially. Not only that, but the influence of this organization and the results of this organization and its accomplishments have reached out through the Nation.

I am in agreement with the chairman when he said, "Why fuss about having certain industries just centrally located"—referring to the TVA. "I do not see, if we are going to look at it from that standpoint, why we should fuss about where the Nation's Capitol is going to be. The way I see it, I believe that the Tennessee Valley has accomplished more than has been seen by the people that helped to prepare these budgets," and so on. It has increased the value of our land. It has increased production. We are taking land that was once no good to us in the seven valley States and we are converting it into forestry. We are using it for other purposes that are needed for the benefit of our Nation.

I believe that the Tennessee Valley Authority has a good thing in ammonium nitrate and the ammonium nitrate plant. I hear people complain, especially private industry, about the TVA having ammonium nitrates and phosphates and what have you in the fertilizer plants. The fertilizer plants of TVA have increased private industry. It has given them a shot in the arm, so to speak. The fertilizer plants, especially the triple superphosphate plants that the TVA carries on have increased the demand for triple superhosphate throughout our Nation. Also ammonium nitrate.

The Mississippi Chemical Corp. is a direct outgrowth of the TVA ammonium nitrates. The Mississippi Chemical Corp. is paying back to its patrons approximately $17 per ton in patronage refunds, plus 5 percent interest on the investment, plus taking care of their plants, which produce even cheaper than TVA.

It seems to me and to the people that I represent that this budget should include that money that is necessary to carry on the test demonstration farm programs throughout our Nation so that we can develop.

Knowledge is power. We know that. We have come a long ways. Let us look back on some other things that have been accomplished, and then go forward. Let us not go backward by cutting the appropriations.

I thank you.

Mr. RABAUT. To whom are these fertilizers available?

Mr. WILDMAN. They are available to test demonstration farm families and also to anyone that wants to buy them in the valley area, provided they use them for test demonstration purposes.

Mr. RABAUT. What about sending a fertilizer out into the different county seats throughout the country? We had a map here before us—we do not have it here now—that showed where it was sent. What I want to know is, Can it be sold out of a store at reduced rates against someone else making fertilizer in the area?

Mr. WILDMAN. Absolutely not.

Mr. RABAUT. That particular question came up on the subject of diammonium phosphate. Do you know anything about that?

Mr. WILDMAN. That is a new product. I do not know too much about it at the present time.

Mr. RABAUT. Is the policy of handling that any different from the policy of handling the other fertilizers?

Mr. WILDMAN. No, sir.

Mr. RABAUT. Then it is not sent out at reduced prices when it is sent for test purposes? It is not sold at a commercial place at a lower price than it can be manufactured by someone else?

Mr. WILDMAN. No. In comparing prices of diammonium phosphate, it seems to me that it is a little high compared to private industry.

Mr. RABAUT. That does not enter into this argument. There was testimony before us that anyone could get it from TVA and get it at such a price that no one could compete with the price. I can understand how it can be sent to test locations for the purpose of introducing it and creating a demand for it, but if it is just sent out to a dealer, he might sell it to anyone who comes along at a low price, and he would be able to undersell anybody else who was trying to get into the manufacture of it.

Mr. WILDMAN. Sir, I do not believe their policy in handling diammonium phosphate is different from their policy of handling triple superphosphate and ammonium nitrate. I just do not believe that that statement is true.

Mr. RABAUT. Is there such a policy with regard to any of the other products that they send out?

Mr. WILDMAN. No, sir.

Mr. PHILLIPS. When the TVA wanted to put $1 million into a new plant under the term "Research"—when actually it would have been a plan to produce fertilizer for sale—Congress denied them that money. In other words, we have on the record this year a statement from TVA that only 1,000 tons is intended to be used for research work. They expect to make 20,000 tons, and they originally intended

to make 43,000 tons, so that you can see there is a difference between what is used for research and what is used for production of fertilizers which would be given or sold cheap to the farmer.

Mr. WILDMAN. TVA is discontinuing its triple superphosphate.

Mr. PHILLIPS. They did not get the money.

Mr. WILDMAN. Well, it has been their thinking from information that I have had in discussing it with some of the officials of TVA that the time was here when they do not need to produce so much triple superphosphate.

Mr. PHILLIPS. That is right.

Mr. WILDMAN. Because they had shown the Nation that it could be done in private industry, and private industry had taken it over and is supplying the demand. So the TVA does not need to do it.

Mr. PHILLIPS. You are completely right.

Mr. RABAUT. Outside of the valley, is their product sold only for test demonstration purposes?

Mr. WILDMAN. Yes.

Mr. PHILLIPS. With this slight difference that there is plenty of evidence that not all of the fertilizer sold outside the valley went to test plots. There was no check on it to see how it was used and what the returns were. It was simply sold to a reselling cooperative. Many of the retail cooperatives bought and sold it without any check on whom they sold it to, or how it was used, or anything else. In other words, the TVA simply put on the market a cheap fertilizer in competition with producers of the same fertilizer.

Mr. RABAUT. If they sold it in such manner, would they be violating the ordinary terms for which they received it?

Mr. WILDMAN. I would think so, but I do not believe that is true—that they are selling the material in that way.

When a bag of ammonium nitrate is moved in my county it has to come to the Extension Service, and the Extension Service approves the practice that the man is going to use it for.

Mr. PHILLIPS. That is correct.

Mr. WILDMAN. It cannot be used for row crops unless it is for test demonstration purposes.

Mr. PHILLIPS. That is the way that it is supposed to be sold.

Mr. RABAUT. That is all right.

Mr. WILDMAN. There are 2 or 3 different groups of test demonstrations. You have the special study farms and you have this farm and that farm, and there is not a bag sold in my county unless there is a paper submitted, or a record submitted to the TVA showing what it was used for and the accomplishments that it made.

Mr. RABAUT. According to your knowledge, anything they make is sold under similar conditions?

Mr. WILDMAN. Yes.

Mr. JENSEN. Mr. Chairman, as you know, I made a statement the other day when the TVA authorities were before the committee that I felt that this fertilizer program of the TVA was by far the most valuable program to all the people in America of any part of the TVA set up. I think the TVA in its development of these commercial fertilizers has done a wonderful work. Of course, we need fertilizer very badly. I happen to come from the State of Iowa. We have there 25 percent of the grade A land in America. But yet we need fertilizer of every kind.

The thing that disturbs the private producer of this diammonium fertilizer is the fact, as testified to by Mr. Bennett of Omaha, that the TVA was getting ready to produce 40,000 tons of diammonium phosphate and sell it at a price of $110 per ton. Some of the producers of diammonium fertilizer have been producing it for as long as 4 years, and according to Mr. Bennett's testimony, it was impossible for the private producer of diammonium phosphate to buy the necessary ingredients that go into the fertilizer and pay taxes, administrative expenses, shipping costs and so on down the line, and sell that fertilizer at less than $143 a ton and make any kind of profit. He gave us the facts and figures that showed actually his concern selling this diammonium phosphate fertilizer at $143 a ton would make a profit of something like 4 percent. He also told us that there were some steel manufacturers, United States Steel and others, that were very anxious to manufacture diammonium fertilizer, and could manufacture hundreds of thousands of tons annually, but they would not attempt to manufacture it and have competition of the like of TVA who could sell it at $110.29 per ton.

The authorities of TVA testified when they were before the committee that they intended to manufacture 43,000 tons of this diammonium fertilizer. Finally, after we questioned them at some length, they decided maybe they only wanted to make 20,000 tons.

Here is the point: The private industries that manufacture this product claim that it has been brought to the point of perfection as far as ingredients and knowledge are concerned to manufacture it.

The thing that I think most of us are interested in is the fact that our farmers need this fertilizer like they need the other fertilizers that the TVA has developed, or helped to develop, and we are fearful that by the TVA selling its fertilizer for $110.29 per ton, it will foreclose private industry, such as the steel companies, from producing great quantities of this material.

We have had no testimony to the effect that the private producers of diammonium fertilizer can compete with this $110.29 fertilizer of TVA. That is the thing that concerns me as one member of the committee. Certainly I do not want to foreclose the TVA from carrying on studies and experiments in development of fertilizer because I think they have done a magnificent job. They have given private industry all the knowledge that they had.

Mr. Curtis testified to that. I think it is wonderful. Private industry has given TVA the knowledge that they acquired on these fertilizers, so it has been a two-way street. That has been very fine. That is about all that I have to say. I just want to make sure that the manufacturers of this very valuable fertilizer are not hindered in any way.

Mr. WILDMAN. TVA is open for any private industry. Any private industry can get the knowledge, or find out what TVA is doing. I do know it is a fact that private industry is marking up a lot more on some of the fertilizer than they claim to be making. They can get the know-how or the facts from the TVA. There is nothing private about it. It is open for investigation to the private concerns. We just welcome them to find out how TVA does it cheaper.

Mr. JENSEN. There is another thing, Mr. Chairman. It does not appear necessary at this stage of the game for TVA to produce even

20,000 tons of this fertilizer because of the fact that it has already been brought to perfection. That was testified to by the TVA staff. I can readily understand why the people of Tennessee are very much in favor of manufacturing all the fertilizer they can. If I lived in Tennessee I would be right here, no doubt, like all you fellows. We have something like 20,000 test farms for these fertilizers.

Mr. WILDMAN. 22,000.

Mr. JENSEN. And 1,300 are in the State of Tennessee, and they get the fertilizer at 45 percent of the cost that the other people have to pay. That may be just a little bit inequitable for the rest of the people in the other States. I can assure you that I do not want to do anything that would stop the experiments and the testing and developing of commercial fertilizer in the Tennessee Valley by the TVA. That is all that I have to say.

Mr. RABAUT. Thank you very much.

Mr. COOPER. At this point I would like to present our good friend and colleague in the House, the Honorable Pat Jennings, who desires to present the names of two witnesses from Virginia who desire to endorse and support the testimony that the witness on the stand just gave.

STATEMENT OF CONGRESSMAN PAT JENNINGS

Mr. JENNINGS. I would like to present Mr. J. B. Bonham and Mr. Jim Hoag, who are president and vice president, respectively, of the Southwest Virginia Agricultural Association, who are here today for the purpose of associating themselves with the testimony that was just presented as it pertains to the research, testing, and experimenting on the test-demonstration farms. They want particularly to urge that the $200,000 be restored to the budget for these test-demonstration farms and for ferilizer research.

STATEMENT OF J. E. SMITH

Mr. COOPER. Next I would like to present Mr. Jack Smith, president of the National Rural Electric Cooperative Association, who will speak in the place of our friend and former colleague, Mr. Clyde Ellis, who is unavoidably absent because of illness.

Mr. SMITH. My name is Jack Smith. I am president of the National Rural Electric Cooperative Association, which is a national service organization for approximately 90 percent of the total REA borrowers in this country and Alaska.

I am also manager of the Mecklinburg Electric Cooperative, Chase City, Va., which serves over 12,000 rural consumers in Virginia.

In passing, I would like to add one remark to what you had to say about the other benefits in connection with some of these developments. We had one of those developments on the Roanoke River right near me. I have been able to see the many intangible benefits that the people have received, such as recreation, and so forth, particularly in that area.

Never before have those people had water enough to take a swim until 2 or 3 years ago when this project was developed. It has just made their lives completely over in that area.

First, I want to thank you, Mr. Chairman, and the committee, for the opportunity of appearing here. I am somewhat substituting

for Mr. Ellis, who, I am sorry to say, is sick today. We want to appear in support of the appropriations for the Tennessee Valley Authority, and also for certain appropriations in connection with the Atomic Energy Commission. I have a statement that I would like to file. It is rather long.

Mr. RABAUT. Without objection, it will be inserted in the record at this point.

(The statement referred to is as follows:)

Mr. Chairman and gentlemen of the committee, my name is J. E. Smith. I am president of the National Rural Electric Cooperative Association, which is the national service organization for approximately 90 percent of all REA-financed electric-type borrowers in the United States and Alaska. I am also manager of the Mecklenburg Electric Cooperative, Chase City, Va.

We appear today in support of appropriations for the Tennessee Valley Authority and the Atomic Energy Commission, and have divided our prepared statement into two major sections accordingly.

The Tennessee Valley Authority

Mr. Chairman, the total appropriation requested for the Tennessee Valley Authority for the fiscal year 1956 by the Bureau of the Budget is $27,550,000. The actual 1955 appropriation for TVA was $120 million, which means that the 1956 request represents a 77 percent cut over the actual appropriations for 1955. The 50 rural electric systems which purchase their entire wholesale power requirements from the Tennessee Valley Authority and which depend on the Authority to supply them increasing quantities of wholesale electrical energy to meet a phenomenal rate of load growth, are, of course, ready to support any budget recommendation for TVA appropriations during fiscal 1956 which will help the Authority to maintain reliable electric service. However, Mr. Chairman, we feel that the $27.55 million appropriation requested for TVA is absurdly low when compared to the prior-year appropriations, and when it is contemplated that the loads of the Tennessee Valley Authority, exclusive of Federal establishments, are growing approximately 13 percent per year. The national average is approximately 8 percent. In fact, peak demands of the area are limited only by power supply available. Yet there is not a penny in the budget request for construction of new generating facilities.

Of the total budget request, $6,500,000, or 23.6 percent, is specifically earmarked to begin construction of a 20-mile transmission line across the Mississippi River to interconnect the TVA system and the proposed plant of Mississippi Valley Generating Co. (Dixon-Yates). This $6 million, which will only initiate construction of the line ultimately to cost $10 million, represents we feel, a surrender by the Federal Government of the integrity of the Tennessee Valley Authority to the representatives of New York investor groups who seek to destroy the right of the American people to enjoy the fruits of their own natural resources.

This $6 million item would be the beginning of a 25-year period of appeasement by the Federal Government of commercial utility interests; a program which will cost the taxpayers of the United States or the ratepayers of the Tennessee Valley area $100 million to $140 million during the first 25 years of operation of the Dixon-Yates contract.

It costs the Tennessee Valley Authority approximately $150 per kilowatt to build thermal generating equipment at its ultra-modern large scale steam electric stations. At that rate, a 67,000 kilowatt steam electric station could be constructed by TVA for merely the $10 million cost of the proposed inter-tie beween TVA and the Dixon-Yates plant. The $100 million figure, which we think is a conservative estimate of the extra cost to the Government of the Dixon-Yates contract over the 25-year period, would build a 67,000 kilowatt steam electric plant for the TVA system. The entire cost of the TVA facilities would be repaid to the Government with interest and at the completion of amortization, the Government would own the plants.

We cannot understand, therefore, why, for several years, the Bureau of the Budget has refused to recommend funds for construction of TVA generating facilities necessary to maintain electric capability to meet expanding loads, while simultaneously the same agencies are now apparently eager to approve the expenditure of similar amounts of money to accomplish nothing but the enrichment of commercial utility companies at the expense of the taxpayers.

Last year, on May 19, 1954, the 21st birthday of the Tennessee Valley Authority, its retiring Board Chairman, Gordon R. Clapp, posted the following notice on the TVA bulletin board:

"Notice to Tennessee Valley Authority Employees:

"This is TVA's 21st birthday. It is also the end of my 21 years with TVA. Goodbye and good luck. My deepest thanks to a great organization for the rewarding experience I have shared with all of you. I know that TVA, under the leadership of its experienced and devoted Board, will continue to do its best to maintain and improve the high standard of public service these 21 years have established. In the months and years ahead, don't let little minds or the greedy intimidate or enchant you or divert you from your service to the public interest.

"GORDON R. CLAPP,

"*Chairman of the Board, Tennessee Valley Authority.*"

Mr. Chairman, we can remember no evidence as conclusive of the greed of the commercial utility interests or of the enchantment which they are capable of exercising, as that which has been apparent in bringing to realization the "Dixon-Yates scheme" for establishing a pattern to destroy the Tennessee Valley Authority as a competitive factor in the wholesale power market, and as a world-wide symbol of American democracy.

At his May 18th press conference, President Eisenhower said:

"As you will recall, we will never wreck the TVA. It is a going, historical concern. It's served a useful purpose. It was put up for particular purposes and, actually, if you go back to the original bill, I don't think many people can quarrel about the purposes for which it was originally set up."

We think that now is the time for the President and the administration to demonstrate their avowed intent to maintain TVA as a going concern.

The entire membership of the National Rural Electric Cooperative Association is unalterably opposed to the principles embodied in the Dixon-Yates contract, and we ask that this subcommittee recommend that the $6 million included in the President's budget for initial construction of a transmission inter-tie between the Dixon-Yates plant and the TVA system be deleted, and that there be substituted therefor a similar amount of money to initiate construction of additional TVA-owned steam electric generating capacity. Construction of additional steam capacity by TVA would not cost the taxpayers one penny and would be continuing evidence of the administration's outspoken intention of maintaining the integrity of the TVA system.

Mr. Chairman, the Congress has, for several years, been concerned with the fact that each year TVA, to meet its ever growing load, has requested substantial appropriations for construction of new electric generating facilities.

Neither the Bureau of the Budget nor the Congress has, during the past few years, seen fit to allow TVA the necessary appropriations to assure the Authority that necessary additional steam electric capacity can be placed under construction in an orderly and economical fashion. Even assuming that the infamous Dixon-Yates deal is finally consummated and the 600,000 kilowatts of Mississippi Valley Generating Co. power is put on the line, the TVA load, exclusive of Atomic Energy Commission facilities, will exceed TVA's capacity to supply such loads by 357,000 kilowatts in 1958. We think that these figures demonstrate that even if the Dixon-Yates power plant is constructed, additional capacity is an immediate requirement.

Some members of this subcommittee, representatives of the administration, and other Government officials have also frequently voiced concern over the fact that although appropriations for TVA power facilities are an investment rather than an expenditure, nonetheless, they must be included in budgetary management calculations and are reflected in national debt figures.

To overcome these objections and to provide TVA with a vehicle of capital finance that will assure it of adequate money to build additional capacity on the most economical basis, the Board of Directors of the Tennessee Valley Authority has transmitted to the Bureau of the Budget a report recommending legislation to provide new sources of capital for TVA power system expansion. The TVA Board has recommended that the Congress allow it to initiate a new financing plan consisting of three principal elements:

(1) TVA would be empowered to issue revenue bonds secured by power sales revenue to be sold to private investors or to the United States Treasury. These bonds would not be guaranteed by the Treasury and would not add to the national debt.

(2) The plan also contemplates that additional power capacity might be made available to TVA under power purchase and lease or lease-purchase agreements with agencies in the region which could finance new construction.

(3) The new financing measures would be supplementary and not in substitution of present appropriations provided by the Congress and revenues available from power operations.

We think the proposal of the TVA Board to the Bureau of the Budget is sound and constitutes a plan which, while providing for annual congressional review of TVA activities, would, nonetheless, enable TVA to proceed on an orderly and economic development of new electric generating resources as the need arose without conflicting with the exigencies of Federal budgetary management and without subjecting the operation of a major utility system to the vagaries of political uncertainty.

As you know, the Hydro-Electric Power Commission on Ontario, which is probably one of the greatest programs of natural resource developments for the benefit of the people that has ever been undertaken by a democratically controlled government, served as somewhat of a prototype or model upon which the concept of TVA was founded. Ontario Hydro was created in 1906 by the Ontario legislature. Until 1934 funds for financing capital expenditures of Ontario Hydro were obtained from the Provincial treasury. Finances depended on legislative action and subsequent sale of Provincial bonds. Some $207 million were invested by the Provincial Government, and although such an arrangement for financing capital expansion was advantageous at first to a new and untried enterprise, its disadvantages were soon apparent. The money advanced each year by the Government was in truth an investment, but for purposes of bookkeeping and accounting, was reflected in an increase of the direct debt of the Government which tended to give a false impression of both the size and nature of the Provincial debt. Calculations of interest charges payable to the Government on the money advanced became increasingly complicated because of changing interest rates and other factors. Simultaneously the obvious success of Ontario Hydro and its adherence to practices of sound finance added to its prestige and ability to offer independently on its own behalf real security to prospective bondholders.

Therefore in 1935 an understanding was reached with the Provincial government whereby all future capital requirements for Ontario Hydro would be financed by the issue of the commission's own bonds and guaranteed, if necessary, by the Province. It is our opinion that the Tennessee Valley Authority has, in great measure, come along the same path followed by Ontario Hydro and is now at a point where appreciable portions of its capital expenditure requirements may be met by the sale of bonds.

We support the TVA request that it be empowered to issue bonds to finance a portion of its future needs for additional generating capacity, and whereas we realize this subcommittee is one primarily interested in appropriations, we hope that the members will realize the benefits that can be achieved by the plan proposed by the TVA Board. The plan would foster the most economic development of the TVA system and enable it to resolve the seemingly irreconcilable problems of budgetary management versus electric system construction and operation.

I would point out, however, Mr. Chairman, that if the plan proposed by TVA is to result in establishing a component of financing truly independent of political vagaries, TVA, once its bond-issuing authority is established, must be allowed to proceed with the issuance of its securities on a businesslike basis without the necessity of submitting each proposed expansion of facilities to the Bureau of the Budget or other administrative agencies for approval.

It is our conception that the Bureau of the Budget should be concerned with budgetary management problems only and should not be an agency which takes unto itself the additional technical problems of engineering decisions with respect to the desirability or lack of desirability of electric power facility construction by the Federal Government.

The very circumstances which indicate that the Tennessee Valley Authority could sell bonds at interest rates below those now applicable to securities of the Federal Government is almost conclusive evidence that the Authority is expertly managed and capable of carrying on its own affairs subject only to the general supervision of the Congress.

We would also emphasize, Mr. Chairman, that the proposal of TVA for independent bond-issuing authority does not relieve this subcommittee nor the Congress as a whole of its immediate responsibility to provide for the expanding power needs of the TVA area. We, therefore, urge that the subcommittee seriously consider the immediate dilemma facing our people in the TVA area. We urge that you reject the budget request for a $10 million transmission line to interconnect with the proposed Dixon-Yates plant—a project which will cost the Government $100 million during a 25-year period. We urge instead that the

subcommittee approve the $6 million, but unmistakably specify that it be used for construction by TVA of additional steam electric facilities where they will best fit into the existing system.

INTEREST OF RURAL ELECTRIC SYSTEMS IN ATOMIC POWER

The rural electric systems are vitally interested in atomic power because of the hope it offers in being able to assist the rural electric systems with many of their difficult wholesale power problems. These power problems seem to remain with our systems year in and year out, and if anything, are becoming more difficult because of the changes which are being made by the administration in Federal power policies. First of all the wholesale power costs of many of the rural electric systems are very high. During the calendar year 1954, REA estimates the total cost of power for all the rural electric systems was $140,600,000.[1] Such a large expenditure is a major item in the total operating costs of the rural electric systems. These systems spend an average of 32 to 33 percent of their gross revenue for wholesale power. Of course, in some of our higher power cost areas it is much higher than that.

In attachment 1 is listed the wholesale power costs of the rural electric systems for the year ending June 30, 1954, in order of decreasing costs. You will note that some of these wholesale power costs are very high. For example in Alaska they averaged 2.32 cents per kilowatt-hour; Maine, 1.51 cents per kilowatt-hour; New Jersey, 1.38 cents per kilowatt-hour; Utah, 1.36 cents per kilowatt-hour; Minnesota, 1.35 cents per kilowatt-hour; Vermont, 1.35 cents per kilowatt-hour; Wisconsin, 1.33 cents per kilowatt-hour; etc. These costs are the cost of power delivered to the substations of the rural electric systems. With such high wholesale power costs, it is difficult for the farmer to make full use of this most valuable hired hand. In many of these high-cost-power areas there is little or no hydro power, and as a result, the only hope many of these systems have for lower power costs is from the development of this great new source of energy.

According to REA, the rural electric systems generated 15 percent of their total power needs during the fiscal year ending June 30, 1954. This power was generated in REA-financed generation and transmission systems. These systems have an installed capacity of 880,000 kilowatts. The generating units of these systems are usually quite small as the utility industry goes. According to REA, steam units vary from 5,000 to 66,000 kilowatts with the predominate size being 11,500 kilowatts. The average size of the internal combustion units is 1,100 kilowatts. We feel the AEC must do some research and development work on these small-size units. Such units are not just typical of the rural electric systems, but also exist in the municipal systems and have many industrial applications.

The generating costs of the rural electric systems also are quite high. This is mainly because of high fuel costs, the size of the units, and their low-load factors. These costs in 1954 ranged from 3 mills to 10.6 mills. The lowest cost was at the Brazos Electric Cooperative at Waco, Tex. This was so low because it included some hydrogeneration. The highest cost was at the Border County Power Cooperative at Warroad, Minn. In the areas of very high cost, the AEC should carry on considerable research and development work because it is in those areas that atomic power will become feasible first. It seems to us that it certainly is more feasible to construct a nuclear powerplant in a high-cost-power area than it is in a location like Shippingport, Pa., which is very close to the soft-coal fields, and also close to good water transportation which would reduce the transportation costs of fuel. Also, our systems offer definite advantages for the construction of demonstration powerplants—sites in rural areas where safety hazards should be at a minimum, low-interest rates which will reduce the capital outlay and the nonprofit operation which will make it easier to measure the actual costs of constructing and operating a nuclear reactor.

Every year the farmer is using new electric appliances and equipment such as sprinkler irrigation, hay driers, freezers, heat pump, etc. As these new uses of electricity are utilized by the farmer, the loads of the rural electric systems are increasing. They are increasing at a faster rate than the commercial utility industry. Attachment 2 shows the input of the rural electric systems for the years 1943 to 1963. From 1954 on these figures are estimates, and we believe

[1] This is an increase of over 15 percent above 1953. This cost of power includes cost of purchased power and prime costs involved in the production and transmission of generated energy.

they are conservative based on past experience. Based on the actual figures, the loads of the rural electric systems are doubling about every 4 to 5 years. This compares with the commercial utility industry where their loads are doubling about every 7 to 10 years. This rapid load growth requires new sources of power. This is a serious problem for many of our rural electric systems because in some areas these systems indicate there is not enough power in sight for present or future growth. On the annual January 1 survey which NRECA makes of the rural electric ssytems, 82 systems indicated that they were handicapped by a present shortage of wholesale power, and 155 systems indicated that they did not have enough power in sight for future growth. These systems look to atomic power for some assistance with this problem, and they hope that this committee will direct the AEC to carry on research and development work which can assist them in meeting these difficult power problems.

Activities of the Rural Electric Systems in Atomic Power

The rural electric systems are trying in every way possible to acquire knowledge of developments which are taking place in this rapidly changing technology. They are doing this under difficult circumstances because neither REA nor the AEC has made available to the rural electric systems sufficient technical assistance. These systems do not have the resources to purchase the necessary technical assistance in what amounts to a highly competitive job market.

Shortly after the passage of the Atomic Energy Act of 1954, the president of NRECA appointed an atomic energy committee. Later this committee proposed to the AEC that the rural electric systems enter into a contractual arrangement with the AEC for a study group to look into the application of atomic power in rural areas. This proposal was submitted to the AEC on September 15, 1955, and was approved by the AEC on January 12, 1955. This study contract was formally executed by NRECA and AEC on March 18, 1955. At that time all members of the study group had received Q clearance. This study group is composed of myself, several other members of the staff, our Vermont director who is chairman of the group, the manager of our association, the managers of generation and transmission cooperatives in New Mexico, Wisconsin, Iowa, and Minnesota, and the manager of a distribution cooperative in the State of Texas. This group on the whole represents rural electric systems from high cost power areas. They are attempting to learn everything they can about developments in the field of atomic power, and then apply their knowledge of rural electrification to these developments. This study group met in Washington recently for 3 days and met with officials of the AEC, the Army Corps of Engineers and private manufacturing companies which are engaged in research and development work in the atomic power field. We feel encouraged as a result of these meetings. It appears atomic power is being developed at a rate much faster than we had any knowledge of. At the same time it appears that the AEC is not doing sufficient development work on small-civilian reactors which the rural electric systems may be able to use for their own generating systems. I will comment in more detail on that later.

Interest in atomic power is evident in our statewide associations of rural electric cooperatives. The statewide association in Kansas recently received approval from the AEC for a limited access agreement. This limited access agreement will enable the statewide organization to receive the classified information available on atomic power, and also enable them to attend classified technical lectures on atomic power research and development. Another one of our statewide organizations, the Indiana Association of Rural Electric Cooperatives, also has a request pending at the AEC for approval of a limited access agreement. Other statewide organizations, and perhaps some of the individual rural electric cooperatives, probably will also apply for such agreements. Our people are hungry for information about atomic power. They are anxious to benefit from the development of this new source of energy.

One of our generation and transmission cooperatives in Minnesota expects in the near future to present a proposal to the Atomic Energy Commission for the construction of a reactor of 20,000 kilowatts electrical output. They are working on this proposal with one of the Nation's leading manufacturing companies. Preliminary studies on this proposal indicate that this cooperative may be able to generate power at a lower cost with nuclear fuels than it is able to from its present steam generation. One of the reasons for this is that this particular cooperative has one of the highest generating costs in the Nation. The AEC will be called on to finance part of the cost of this proposal. It is hoped that this

committee will encourage the Atomic Energy Commission to facilitate such proposals for the construction of small reactors, and to allocate some of the funds set up for the demonstration power reactor program for this purpose. We believe this is absolutely essential if these small consumer-owned systems are going to be able to participate in this program. If they are not able to participate in this program, and if atomic power is developed so as to be lower in cost than in their present means of generation, it could spell the death of these cooperatives.

THE AEC BUDGET

I found it very difficult to do an intelligent analysis of the AEC budget because of the little information available on it. It seems that for reactor development, the budget items are only broken down into military reactor development and civilian reactor development, and it is impossible to determine how the money will be allocated within these large categories for particular projects. The AEC has indicated that this information is not available to the public. Without such information we cannot gage the emphasis which is being put on particular projects by the Atomic Energy Commission. But we believe from the analysis we have been able to make that the AEC is not doing sufficient work in several fields. We hope this committee will see fit to encourage the Atomic Energy Commission to do work in these areas, and also appropriate the necessary funds for such work.

First of all, we believe the AEC should be authorized to construct large demonstration reactors in areas where it is using power such as in the Tennessee Valley and in the Northwest. We believe it is only logical that the AEC construct such plants for its own use. Also, if the Federal Government constructs these plants, they will serve as real yardsticks and enable us to determine exactly what the costs of atomic power generation and operation are. We certainly will not be able to determine this from the plant which is being built at Shippingport, Pa., because of such factors as rapid tax writeoffs, the usual private utility practices of hiring elaborate engineering services, and other methods which make it very difficult and practically impossible to measure what the actual costs are. We also believe that if the AEC constructs such plants, it will be able to relieve the burden it is putting on the supply of power available for civilian use. If this is done, it may be unnecessary to make such deals as the scandalous Dixon-Yates contract. We believe such construction by the AEC of large demonstration plants is consistent with the provisions of the Atomic Energy Act of 1954. I would like to read from the Conference Report on H. R. 9757 which later became the Atomic Energy Act of 1954. This language is contained in House Report 2666, 83d Congress, 2d session on page 47.

"The committee of conference amended section 31a, subsection 4 so as to clarify the authority of the Commission to build or contract for the building of large-scale atomic energy utilization facilities for the purpose of demonstrating the practical value of such facilities in the generation of electric energy or for other industrial or commercial purposes. The construction of such large-scale demonstration facilities would require specific authorization by the Congress as provided in section 261."

We support the Gore bill, S. 1049, which would provide such authorization. We hope this committee will see fit to encourage the AEC to request such authorization, and also to make it clear that if such an authorization is approved by the Congress, this committee will recommend that the necessary funds be appropriated for that purpose.

Also, in the construction of such large-scale demonstration plants, the rural electric systems are entitled to preference in the marketing of any surplus power which may be available. If such plants were developed in large sizes, and if the power produced proved to be economically feasible, our systems may be able to obtain some additional power to meet their ever-increasing loads. It certainly would serve a most useful purpose in providing a yardstick to measure the cost of nuclear power generation.

We would also like to see this committee direct the AEC to carry on more research and development work in the field of small reactors, in particular in the development of reactors of 2,000 to 30,000 kilowatt electrical output. At the present time the AEC is not carrying out work in this area except on pilot plants or prototypes for much larger reactors. We want to see them construct or participate in the construction of small reactors of several different types. We have received several reports that such reactors may be feasible and may be competitive in the near future. We certainly believe that this should be explored. We were told by people at the AEC that it is not necessary for them

to engage in this type of activity since the Army is doing the research and development work in the field of small reactors. We believe the Army is performing a very useful function in developing a package reactor, but at the same time we feel that this reactor is being developed with so many military requirements which increase the cost that it will not assist much in the search for competitive civilian power from small reactors. We would like to see this committee encourage the AEC to undertake such research and development by itself, and also through a demonstration power reactor program in which rural electric systems and the municipals would be encouraged to submit proposals for participation. We also would like to see sufficient funds allocated for this purpose. We believe the AEC has ample authority to carry on such a program under sections 31 (a) and 32 of the Atomic Energy Act of 1954. Under section 32 the AEC "is authorized and director to conduct, through its own facilities, activities and studies of the generation of usable energy." Under section 31 (a) the AEC "is authorized and directed to make arrangements (including contracts, agreements, and loans) for the conduct of research and development activities relating to the generation of usable energy." We believe that under section 31 (a), the AEC could enter into contracts and agreements with our rural electric systems for the development of atomic power from small reactors. Through such contracts and agreements, they could provide the necessary financial and technical assistance. They are now doing or planning to do this with several groups of large private utilities. We must not be excluded from such research and development work because our needs are for smaller units, and because we do not have the financial and personnel resources of these large private utility combines.

We wish to call your attention to paragraphs 5, 6, and 7 of the section entitled "Legislative Program of the Resolution on Atomic Power" (attachment 3) adopted unanimously at the last annual meeting of the National Rural Electric Cooperative Association held at Atlantic City, February 17, 1955. It is on the basis of this resolution that I am making these requests.

DIVISION OF CIVILIAN POWER APPLICATION

We are concerned with the fact that the AEC still has not established a division of civilian power application as we believe the Congress intended it to do when it adopted section 25 (a) of the Atomic Energy Act of 1954. This section reads:

"There is hereby established within the Commission—a. * * * divisions (not to exceed 10 in number) as the Commission may determine to be necessary to the discharge of its responsibilites, including a division or divisions of primary responsibilities which include the development and application of civilian uses of atomic energy * * *."

We believe the establishment of such a division is absolutely essential if the development of civilian atomic power is going to be given sufficient emphasis. Also, it will facilitate the provision of technical advice and assistance for groups such as ours. Our people will know where to go and who to deal with if such a division is established. We hope that this committee will see fit to call to the attention of the AEC this provision of the Atomic Energy Act of 1954, and also to appropriate sufficient funds for the AEC to establish such a division with an adequate staff. At the present time we understand that there is a civilian reactor branch in the Reactor Development Division. This is a step in the right direction, but only a step. This branch is very small—it has only 9 people. Because of this we cannot see how it could possibly do the tremendous job it faces. The personnel in this small branch are not able to give us the advice and assistance we require. They do not have sufficient personnel with knowledge of the needs of the rural electric and public utility systems. These systems require more technical assistance and advice than the large commercial power companies because of their limited financial and personnel resources. REA, at the present time, is not staffed to offer the necessary nuclear power advice and assistance. We believe REA should build up a nuclear power staff. But at the same time, we believe that AEC must assist us along these lines.

The requests we are making of this committee are not great, and do not involve tremendous sums of money when considered in the context of the tremendous atomic energy program and the challenge and promise of atomic power. If the committee does something about these requests, we feel sure the rural electric systems will have the opportunity to benefit from what may be an abundant new source of electric energy. The farmers of America will be grateful for any helpful action taken by the members of this committee.

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ATTACHMENT 1

Wholesale power costs of rural electric systems for year ending June 30, 1954, in order of decreasing cost

[Official REA figures]

	Cost per kilowatt-hour, cents		Cost per kilowatt-hour, cents
1. Alaska	2.32	24. Colorado	.83
2. Maine	1.51	25. Kansas	.81
3. New Jersey	1.38	26. Kentucky	.78
4. Utah	1.36	27. North Carolina	.75
5. Minnesota	1.35	28. Wyoming	.72
6. Vermont	1.35	29. California	.72
7. Wisconsin	1.33	30. Virginia	.69
8. Michigan	1.28	31. New Mexico	.69
9. Iowa	1.28	32. South Carolina	.68
10. New Hampshire	1.28	33. Georgia	.64
11. Delaware	1.22	34. Oklahoma	.62
12. New York	1.12	35. Arkansas	.58
13. North Dakota	1.01	36. Texas	.58
14. Maryland	1.00	37. Alabama	.58
15. West Virginia	.96	38. Arizona	.55
16. Pennsylvania	.94	39. Louisiana	.55
17. South Dakota	.89	40. Mississippi	.53
18. Missouri	.89	41. Tennessee	.49
19. Florida	.86	42. Idaho	.48
20. Ohio	.86	43. Montana	.47
21. Indiana	.85	44. Nevada	.46
22. Nebraska	.84	45. Oregon	.35
23. Illinois	.84	46. Washington	.31

The United States average is 0.76 cents.

ATTACHMENT 2

Estimated input of kilowatt-hours of energy of REA borrowers by calendar year, 1943–63 [1]

Year	Input in kilowatt-hours	Percentage increase over preceding year	Year	Input in kilowatt-hours	Percentage increase over preceding year
	Billions			*Billions*	
1936	[2]		1950	8.308	23.0
1937	[2]		1951	10.241	23.3
1938	[2]		1952	11.991	17.1
1939	[2]		1953	13.890	15.8
1940	[2]		1954	[1] 15.480	[3] 11.5
1941	[2]		1955	16.810	9.6
1942	[2]		1956	18.150	8.0
1943	1.920		1957	19.480	7.3
1944	2.188	14.0	1958	20.820	6.9
1945	2.417	10.5	1959	22.160	6.4
1946	2.817	16.5	1960	23.490	6.0
1947	3.812	35.3	1961	24.830	5.7
1948	5.232	37.3	1962	26.170	5.4
1949	6.782	29.6	1963	27.500	5.0

[1] Actual input through 1953; estimated for 1954–63. "Input" excludes power produced for resale to non-REA borrowers. Source: REA.

[2] Data for years 1936–42 not available on comparable basis. Gross input for earlier years destroy comparability because data on energy generated for resale to non-REA borrowers is not available.

[3] In the 5-year period 1949–53, inclusive, energy input more than doubled (1953 was 105 percent of 1949).

ATTACHMENT 3

RESOLUTION ADOPTED AT THE NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION ANNUAL MEETING, FEBRUARY 17, 1955

Whereas we are entering a period in which much of our electrical energy will be generated from nuclear fuels; and

Whereas the people of this country have already spent over $13 billion on the atomic energy program development; and

Whereas if this great new energy resource is to be developed and utilized for the benefit of all the people rather than pave the way for profiteering by a few; and

Whereas the United States is engaged in a race with the Soviet Union in the development of peacetime uses of atomic energy as well as military uses and that the one may well be as important as the other in the years ahead: Now, therefore, be it

Resolved, That NRECA, the member systems and our allies in other organizations press for the establishment of Federal atomic energy policy which will insure the rapid development of low-cost power from a program of action which will include participation by public, cooperative, and private power agencies, and that the same protection of the public welfare long established in another field of public resources, that of waterpower, be extended to this new source of energy, and that to implement such principle the following policies and legislation be supported:

LEGISLATIVE PROGRAM

The Atomic Energy Act of 1954 should be amended to:

1. Make compulsory the establishment of a civilian electric power development and distribution administration which would be responsible to the Congress and the people for the rapid development and distribution of atomic power, and that this administration should be required by law to appoint consultative committees on which there would be representatives from private, public, and cooperative organizations of the electric industry, and that these committees be kept informed and serve in an advisory capacity to the administration and thus be a source of informed opinion to the Congress, the electric industry, and the general public.

2. Provide for compulsory licensing of all atomic patents and extension of the licensing period for an indefinite time, and fix patent rights to discoveries as a part of the public domain.

3. Authorize any Federal power agency to construct Federal atomic yardstick plants with funds appropriated by the Congress (the Johnson amendment).

4. Give preference to nonprofit power systems to nuclear fuels.

5. Direct the AEC to cooperate with REA and the rural electric systems to make possible full participation by the rural electric systems in the atomic-energy program.

6. Direct the AEC to give adequate and increased attention to the development of small reactors readily adaptable to rural electric and municipal systems.

7. Direct the AEC to construct and operate several small- to large-scale experimental reactors immediately to supply power to AEC's own operations.

8. The AEC should be urged to provide adequate technical assistance to an NRECA or joint REA-NRECA study team and request additional funds from the Congress for that purpose if necessary.

AGENCY POLICY AND ACTION

And, further, in terms of agency policy and action, NRECA and the member systems and our allies in other organizations should press for the following agency policies and actions:

1. REA should budget funds and personnel for the benefit of REA borrowers to make possible full joint participation with NRECA in the atomic-energy study program and keep all systems fully informed.

2. The AEC should carry out the intent of the Atomic Energy Act and establish a division of civilian power development without waiting for Congress to make it mandatory, and the recently appointed consulting committee should be broadened to include additional representatives of the rural electric systems.

3. The AEC should be urged as a matter of administrative policy to devote more funds and personnel to the specialized needs of the rural electric systems.

4. The AEC should actively encourage and assist rural electric systems in submitting proposals for development and experimentation so as to actively

encourage competition in the atomic-energy program. The AEC should recognize its continuing primary responsibility that most of the experimental work on power reactors should be carried on directly by the AEC in order that patent rights to the processes should become part of the public domain and not a source of inordinate profit or bottlenecking in the hands of private groups.

5. The AEC should abandon the largely fallacious view that the subsidies being granted to private corporations by the AEC and ODM are more economical to the people and the Government than an outright subsidy through the AEC for reactor development, and the AEC should recognize that their present and past policies in this area will result in concentration of control, special privilege, and monopoly in the program.

6. The AEC should immediately seek funds to construct one or more large demonstration reactors to serve its own needs at large atomic installations as this is already legal under the law.

7. The AEC should cease making basic policy decisions in the atomic-power program without adequate representation of rural electric, municipal, and Federal power systems, as these policies being established are almost as important as legislation, and there is every evidence that the private-power companies are already being consulted while other groups are excluded.

8. The AEC should make every effort to reduce the area of information circumscribed by security restrictions in order that the public, including our systems without cleared personnel, may have the advantage of a maximum of information on prices of materials, costs, techniques, subsidies, and other information vital to understanding.

9. The AEC should immediately spell out clearly the procedures by which it intends to effectuate its responsibilities under the power-preference provisions to nonprofit electric systems set forth in the Atomic Energy Act of 1954. This statement should include procedures on notification of availability of power, firming power, wheeling, and other arrangements essential to preference rights; and be it further

Resolved, That the NRECA board of directors instruct the atomic energy committee of our staff to watch this whole atomic program carefully and keep our people and the Members of the Congress informed on developments and needs;

And further that the association management be authorized and delegated to authorize such staff personnel and to obtain additional services as necessary to adequately keep abreast of atomic power program developments, provided it is understood that budget is not now available for extension of services in this direction.

Mr. SMITH. I just want to make a few brief remarks in connection with our testimony in support of those appropriations.

First, with reference to TVA, we find that the actual 1955 appropriations for TVA were $120 million, whereas the total requested for the fiscal year 1956 is only $27,550,000. This represents a 77 percent reduction.

There are 50 rural-electric systems that purchase their energy requirements from TVA, and these systems depend upon TVA to supply them power to meet their ever-increasing loads. The TVA loads, exclusive of Federal establishments, are growing at the rate of 13 percent per year. The national average is 8 percent per year. The loads of many of our rural electrics tend to double every 4 or 5 years. Yet there is not 1 cent in the budget request for construction of new generating facilities. There is contained in the budget a request of $6,500,000 to begin the construction of a 20-mile transmission line across the Mississippi River to interconnect with TVA facilities and the proposed plant of the Mississippi Valley Generating Co. This represents 23.6 percent of the total budget request. The ultimate cost of that line is estimated at $10 million. This $6,500,000 item would be the beginning of a 25-year period, we think, of appeasement by the Federal Government of commercial-utility interests, which program will cost the taxpayers, or the rate payers, from $100 million to $140 million during the first 25 years of operation of the Dixon-Yates contract.

Now, gentlemen, it costs the TVA about $150 per kilowatt to build the thermal generating equipment. At that rate a 67,000 kilowatt steam plant could be constructed by TVA for merely the $10 million cost of the proposed transmission line across the river. The $100-million figure would build a 670,000-kilowatt steam-electric plant.

At the same time, the entire cost of the plant, if built by TVA, would be repaid to the Government with interest, and the Government would retain ownership of the plant. The entire membership of the National Rural Electric Cooperative Association is opposed to the principle embodied in the Dixon-Yates contract, and we urge that this committee recommend that the $6,500,000 be deleted for the purpose requested, but that a similar amount be substituted therefor to start construction of additional generating capacity by TVA.

Mr. Chairman, many of our officials have frequently voiced concern over the fact that although appropriations for TVA are an investment rather than an expenditure, nontheless, they must be included in the budget and reflected as part of the national debt figures. To overcome these objections, and at the same time provide TVA with necessary financing for growth, the Board of Directors of TVA have sent to the Bureau of the Budget a report recommending legislation to provide new sources of capital for TVA. These recommendations would principally allow TVA to issue revenue bonds secured by power sales revenues to be sold to private investors or to the United States Treasury. I think that you are familiar with that plan.

We think this proposal to be sound and in the best interests of the general welfare. We heartily support this proposal.

ATOMIC ENERGY COMMISSION

Now, Mr. Chairman and gentlemen, I would like to make a few remarks with regard to appropriations under the Atomic Energy Commission.

Our rural electric systems are vitally interested in atomic power because of the hope it offers in being able to assist these systems with many of their difficult wholesale power problems.

First of all, the wholesale power costs of many of our systems are very high. During the calendar year 1954 REA estimates show that our systems spent $140,600,000 for wholesale power. These costs represent an average of 32 to 33 percent of the gross revenues of these systems. Of course, in some of our higher power costs areas it is much higher than that.

For example, power costs for Alaska during the period ended June 30, 1954, amounted to 2.32 cents per kilowatt-hour; in Maine, 1.51 cents; New Jersey, 1.38 cents; Utah, 1.36 cents; Minnesota, 1.35 cents; Vermont, 1.35 cents; Wisconsin, 1.35, and so on.

These costs are the cost of the power delivered to substations of the rural electric systems. With such high wholesale power costs it is difficult for farmers to make full use of electric power so badly needed on the farms today.

In many of those high-cost areas there is little, or no hydro, and consequently, the only hope any of these systems have for low-cost power is atomic energy.

During the fiscal year 1954 the rural electric systems generated 15 percent of their total power needs. According to REA, the size of

generating units varied from 5,000 kilowatts to 66,000 kilowatts, with the predominant size being 11,500 kilowatts.

We feel that the Atomic Energy Commission must do some research and development on these small-size units. Such units are also typical of the needs of many municipalities and industrial needs.

It is our feeling that our systems offer definite advantages for the construction of demonstration power plants:

(1) Our systems are located in rural areas where safety hazards should be at a minimum.

(2) The low interest rates available to our systems will reduce the overall capital outlay.

(3) The nonprofit operations of our systems will make it easier to measure the actual cost of constructing and operating a nuclear reactor.

The loads of our systems are increasing at a rapid rate. They tend to double every 4 to 5 years, as compared to every 7 to 10 years for commercial utilities. This presents a serious problem to many rural electric systems. A problem of adequate power supply for present and future needs is presented.

The rural electric systems are trying in every way possible to acquire knowledge of the developments in the atomic-power field. This is quite difficult when we consider the lack of technical assistance available to them. That is due mainly to the inability of the rural systems to purchase that assistance.

Therefore, in connection with the budget of the Atomic Energy Commission we would like to request:

(1) That this committee encourage the Atomic Energy Commission to request authorization to construct large demonstration reactors in areas where it is using power such as in the Tennessee Valley and in the Northwest, and also to make it clear that if such an authorization is available, this committee will recommend that the necessary funds be appropriated for that purpose.

(2) That this committee direct the Atomic Energy Commission to carry on more research and development work in the field of small reactors. In particular, the development of reactors of 2,000- to 30,000-kilowatt output.

Further, that rural electric systems and municipals be encouraged to submit proposals for participation, and that sufficient funds be allotted for this purpose.

(3) That this committee will see fit to call to the attention of the Atomic Energy Commission the provision of the Atomic Energy Commission Act of 1954, providing for the establishment of a division of civilian power application, and that sufficient funds be appropriated for the Atomic Energy Commission to establish such a division with an adequate staff.

Mr. Chairman, that completes my statement.

Mr. RABAUT. Off the record.

(Discussion off the record.)

Mr. KIRWAN. Can you tell me, Mr. Smith, starting off let us say at New York, why it runs 1.12 cents per kilowatt-hour up to 2.32 cents in Alaska? Why are those so high?

Mr. SMITH. Well, we think one reason is that you have very little hydrodevelopment in those areas, and then, as we have shown by some charts we have developed in the past, the closer you get to some of these hydrodevelopments, such as TVA and the Northwest, the

closer to these areas the cheaper the power rates become, not only from that source but from the other sources as well.

Mr. KIRWAN. In Ohio it is only 0.86 cents. Why would Ohio be 0.86 cents, when it is 1.35 and 1.51 up in Maine and New Jersey? New Jersey, I think, had power before Ohio had it. Why should it be selling for that price there? There is no hydropower in Ohio, and no hydropower in Jersey.

Mr. SMITH. Mr. Kabat, who is a member of our staff, Mr. Chairman and gentlemen, just mentioned to me that the Ohio rate was much higher than this until they formed a G. & T. cooperative in Ohio and consequently brought the cost of power down.

Mr. KIRWAN. That is the point I wanted to bring out. What makes it cheaper in Ohio than all those other States?

Mr. RABAUT. There is a yea-and-nay vote on recommittal on the floor. We could wait for the second rollcall.

Mr. PHILLIPS. In this list on the last page of your statement you show Alaska as 2.32 cents. Is that not purchased from public power in Alaska?

Mr. KABAT. I believe that is mainly power that is either generated by the cooperatives themselves or is purchased from facilities of the Department of Defense or some similar installation. It is so high mainly because of the high cost of fuel.

Mr. PHILLIPS. I notice in Nebraska, which we heard about before the committee as being entirely a public power State, Nebraska is getting 0.84 cent, which is about half way up or down the list. Is that not fairly high for these comparable rates, since they pay no taxes?

Mr. RABAUT. Is that coal there?

Mr. KIRWAN. They have only a little hydropower from Garrison Dam.

Mr. PHILLIPS. The testimony this morning was that it was the use of steamplants that brought down the rates.

Mr. KABAT. I would say that two important items have contributed more than anything in bringing down rates. One is the fear of competition. The other is the threat of REA financed generating and transmission facilities.

Mr. PHILLIPS. Let me ask you something else. We did not have the mayor of Memphis before us today, but he sent us a very firm statement that if he had to buy power from a private utility he would not buy it. I do not know—is he going back to coal, oil, or something? What I want to ask is: How many REA's are there in the country?

Mr. SMITH. A little over 1,000.

Mr. PHILLIPS. If all the REA's took the same position against the use of private power, how many of them would have to turn off the lights?

Mr. SMITH. That would be hard to answer. We take the position that we are looking for low-cost power.

Mr. PHILLIPS. Just tell me how many would have to turn off their lights. Most of them would, would they not?

Mr. SMITH. A good percentage, because a good percentage of them are buying from the power companies; if that is your question.

Mr. PHILLIPS. Surely.

Mr. SMITH. Mr. Kabat says about 47 percent.

Mr. KABAT. They buy 47 percent of their total power needs from commercial power companies.

Mr. COOPER. Mr. Chairman, we are glad to cooperate with the committee. I should like to present Mr. Paul Tidwell, of Tennessee.

STATEMENT OF PAUL H. TIDWELL

Mr. RABAUT. Mr. Tidwell, we would be glad to hear from you.

Mr. TIDWELL. Mr. Chairman, I should like to submit my short statement for the record and say that you had the TVA Board up here last week, and you have heard some fine testimony here today. I think with that we will call our part of the testimony closed.

(The statement is as follows:)

Mr. Chairman and gentlemen of the committee, my name is Paul H. Tidwell. I am manager of the Meriwether-Lewis Electric Cooperative, Centerville, Tenn., and am also Tennessee director of the National Rural Electric Cooperative Association.

Mr. Chairman, my statement will be very short. I want to endorse what has been said in support of adequate appropriations to carry on the TVA program. Certainly the meager amount of $27,550,000 recommended by the Bureau of the Budget is not adequate to do the job which has to be done. The budget request earmarks almost a fourth of the total recommended to start construction of a transmission line from the Dixon-Yates plant to bring power into Memphis.

The cooperatives for whom I am speaking today do not want Dixon-Yates power brought into the area. We hope this committee will delete the $6,500,000 item contained in the President's budget to start construction of the Dixon-Yates transmission line and instead earmark at least this much for steam-generating units, as requested by the TVA Board. We are facing a serious power shortage in the area unless funds for increased power supply are made available. Dixon-Yates deals are not a satisfactory answer. Throughout the last 22 years a great program in the TVA area has been carried out as a partnership between the Federal Government and its local citizens. It has been a true partnership—not a phony one. It has been the kind of partnership we would like to see maintained and promoted.

Mr. Chairman, we certainly hope the committee will approve at least $6,500,000 for new steam generating units and at the same time cut out funds for the construction of the transmission line to tie the Dixon-Yates plant into the TVA system.

One way much of TVA's budget trouble can be overcome would be for approval to be given for the agency to issue revenue bonds in line with Board of Directors' report recommending this to the Bureau of the Budget. We believe that permission to issue revenue bonds, if given without unnecessary and crippling restrictions, would partially solve TVA's budgetary troubles. In the meantime, until a solution is worked out the Congress must help by providing adequate appropriations.

Mr. Chairman and members of the committee, I want to thank you for the kind attention and consideration you have given me.

Mr. RABAUT. I presume you are in accord with all the testimony that has been given here today, Mr. Tidwell?

Mr. TIDWELL. I would say most of it; yes.

Mr. RABAUT. Thank you. Mr. Cooper?

STATEMENT OF CHARLES M. STEWART

Mr. COOPER. Next, Mr. Chairman, may I present Mr. Charles Stewart of Kentucky.

Mr. RABAUT. We would be glad to hear from you, Mr. Stewart.

Mr. STEWART. Mr. Chairman, to cooperate with the committee, which has been very generous with its time today, we will file our report.

(The statement is as follows:)

Mr. Chairman and gentlemen of the committee, my name is Charles M. Stewart, and I am manager of the Warren Rural Electric Cooperative Corp., at Bowling

Green, Ky., and a director on the national board of the National Rural Electric Cooperative Association.

What I have to say, I can say very briefly. My cooperative and 51 other cooperatives are dependent upon TVA for our wholesale power supply. Our loads are growing rapidly and our sources of power must expand with corresponding rapidity.

For several years now we have been attempting to secure funds with which we can start a new steam plant at Fulton, Tenn., to provide for our future needs, but we have been unsuccessful. As a result we are facing a crisis in our power supply. The only alternative that has been offered us to date is the Dixon-Yates deal, and we are not inclined to accept that way out of our difficulties. We are not going to sell our heritage of a dynamic TVA for a mess of Dixon-Yates pottage.

We need your help. We want the funds recommended by the Bureau of the Budget for the Dixon-Yates transmission line to start work on the Fulton plant. It is our great hope that the Congress will provide that this be done.

If the Congress does not intend to continue to meet TVA's needs, i. e., our needs by prompt appropriation, we urge your consideration of the new financing plan for TVA. But providing for this new financing plan is basic legislation and such legislation will probably not be forthcoming this year. In the interim we cannot turn the lights out in the valley. We urge that these funds be made available for the plant at Fulton while we are trying to get agreement on alternative plans for financing the expansion of power supply in the TVA area. The Congress cannot deny the utility responsibility TVA has in the valley. Please give us your assistance in meeting this emergency, and we will work with you on plans to make it impossible for such an emergency ever to occur again.

Mr. STEWART. We are another cooperative in Kentucky that is receiving its power from TVA and is dependent upon an adequate source of power. We hope that this committee will see fit to see it is continued.

Mr. PHILLIPS. You are from Bowling Green, Ky., across the river?

Mr. STEWART. Yes, sir.

Mr. RABAUT. Thank you, Mr. Stewart.

Mr. COOPER. Mr. Chairman, we thank the committee for the kind and attentive hearing they have given us, and we appreciate the courtesies extended. I speak on behalf of all those who have appeared today and all of our colleagues in the House who are here and interested in the matter.

Mr. RABAUT. You have had a very fine representative group here today, Mr. Cooper. We are very glad to have heard you.

Mr. JENSEN. I do not know that what I have to say now will add anything to this hearing, but I am duty bound to say it, believing as I do, that after all is said and done we must remember that in these States, such as my State of Iowa, the private utilities pay local, State, and Federal taxes on revenues from power, which amounts to something in the neighborhood of about 1¼ mills on every kilowatt-hour of power that is produced and marketed.

It is not any great feat, as I see it, for anyone who does not pay Federal taxes to undersell the fellow who does, regardless of what business he is in. That would pertain to farming as well as everything else. If a farmer in one State did not pay taxes, the farmer in the adjoining State and every other State in the Union would have an awful time competing with him on the price of goods.

I think it is well to remember, gentlemen, that if it were not for the taxpayers of America there would be no money in the Treasury to appropriate for TVA or any other enterprise or purpose. So let us not be too tough on the taxpayer.

Mr. RABAUT. The committee is adjourned.

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